

Shipwrecks in Jervoise Bay

Mike McCarthy*

Introduction

Jervoise Bay, south of Fremantle, Western Australia (Figure 1) is a well known graveyard of ships and appears to have been used as such from 1890 to 1910.

The bay was not the only graveyard in use at that time. At least four hulks were sunk in Careening Bay, the *Dato*, *Day Dawn*, the Careening Bay Unidentified and possibly the emigrant ship *Rockingham*. The iron hulk *Conference* was scuttled on a reef 32 km north of Fremantle, and the remains of an iron or part iron framed vessel lie just south of the Marmion Angling Club (possibly the hulk *Lalla*). After 1910, with few exceptions, all redundant hulks and barges were dumped in the deep water graveyard south-west of Rottnest Island. *The Beaches, Fishing Ground and Sea Routes Protection Act*, 1932 formalized that *de facto* arrangement and the post World War II period saw numerous war surplus vessels, submersibles, flying boats, hulks and barges scuttled in the designated area.

Jervoise Bay itself was named after Captain Jervoise of H.M.S. *Success*, and first came into prominence in 1829 with Thomas Peel's unsuccessful attempts to start a township at Clarence just south of Woodman Point.¹

The *Rockingham*, Peel's third emigrant ship, appears to have been the first casualty in Jervoise Bay and apparently drove ashore in May 1830 at Clarence after breaking her capstan during a heavy storm. Her armament of four guns was apparently thrown overboard and these appear likely to still remain in the bay, having been recorded six months later as being sunk in the sand at Clarence. The *Rockingham* was later refloated and the settlers soon drifted away from what proved to be an ill-founded venture. The proposed township of Clarence was soon forgotten.²

In 1912, preliminary work began on the building of the proposed Henderson Naval Base at Jervoise Bay. This base was to include facilities for 26 warships with docks, workshops, refuelling facilities, ammunition and explosive storage, wharfs, breakwaters, anti-aircraft stations and medical facilities. These plans were shelved, however, with the advent of World War I and were later abandoned. Jervoise Bay then went through another relatively quiet period with only two shipwrecks, the *Abemama* in 1927 and *Alacrity* in 1931. The arrival in 1964 of the Underwater Explorers Club (U.E.C.) heralded another era in Jervoise Bay with the club's base on the southern shore of Woodman Point being a focal point for the new

* Department of Maritime Archaeology, Western Australian Maritime Museum, Cliff Street, Fremantle, Western Australia 6160.

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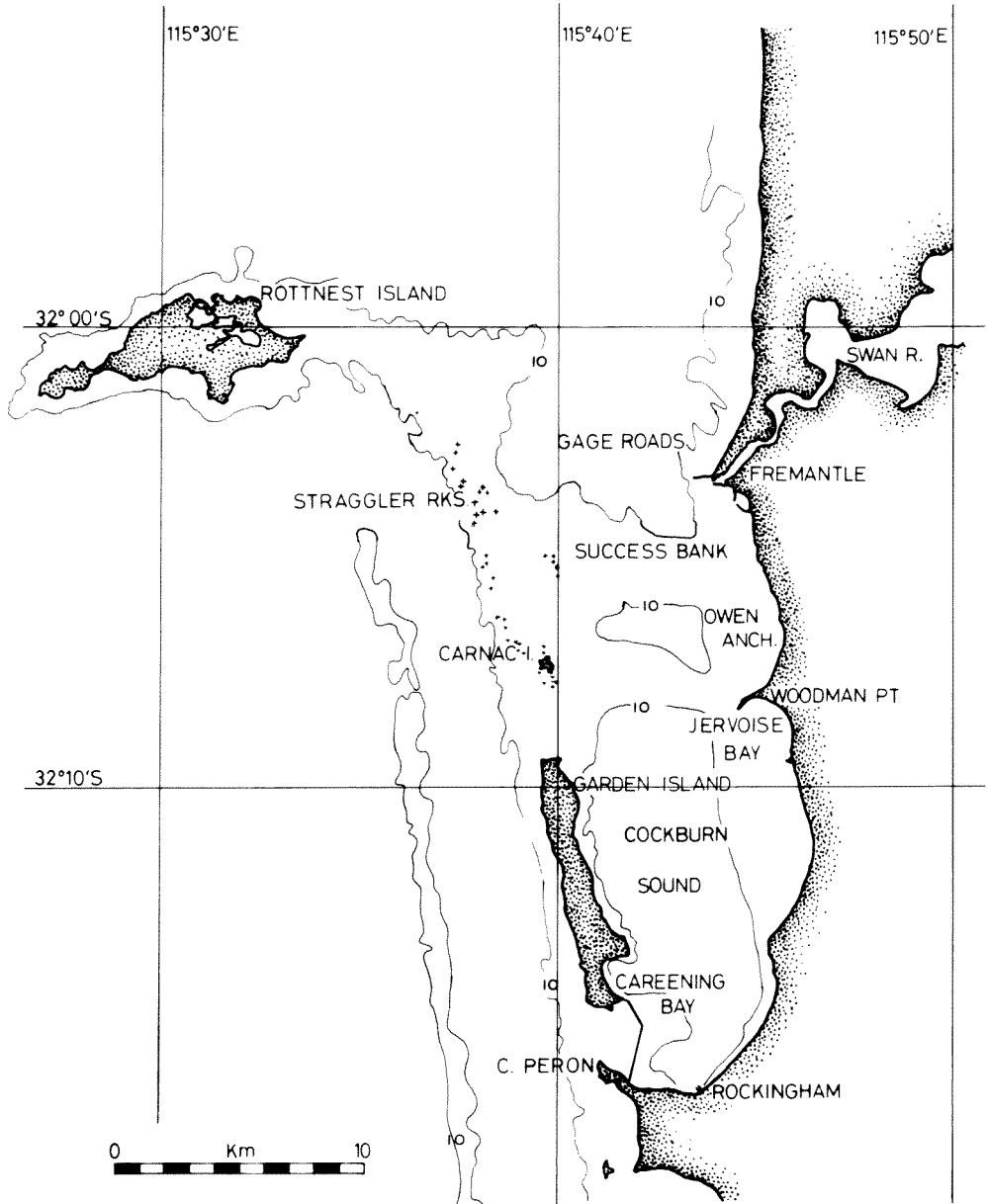


Figure 1 A map of the Fremantle area showing Jervoise Bay.

breed of diving adventurers and historians. These hardy souls literally crawled over every inch of the bay in the late 1960s and first reported the existence of eight wrecks in the course of their searches and underwater activities.³ The U.E.C. were followed in 1971 by small ship-building companies who built their facilities almost on the site of old Clarence itself. More recently, in the late 1970s, the oil drilling rig *Ocean Endeavour* was built in a specially dredged basin at the top of the bay. The success of this venture heralded the events which led indirectly to the funding of this study, as it became apparent that the bay with its calm water, vacant shoreline and proximity to both Fremantle and the heavy industry of Kwinana, was an ideal site for further development.

Before these new developments began, however, environmental impact studies were commissioned and a grant of \$2,000 was made to the Western Australian Museum to fund a study of the wrecks in the bay and ascertain which, if any, were worthy of preservation. This grant from the Department of Conservation and Environment enabled the Museum to allocate one staff member (the author) to commence on-site and archival work using members of the Maritime Archaeological Association of Western Australia (M.A.A.W.A.) as voluntary field and archival assistants.

The project commenced in November 1978 with six major aims:

- 1 to locate all the wrecks in the bay;
- 2 inspect and evaluate each site;
- 3 identify each site from the research and physical remains;
- 4 produce reports to be submitted to the relevant authorities;
- 5 preserve those worthwhile sites by the best means possible;
- 6 report on the overall project.

The project was completed in August 1979 with preliminary reports presented including a submission to the Environmental Protection Authority in which the Museum outlined its policy on the future treatment and/or preservation of the wrecks in the bay.⁴

The Known Wrecks at the Commencement of the Study

At the commencement of the study in November 1978 the known wrecks in the bay were:

- Wreck 1 a submarine believed to be the *K XI*;
- Wreck 2 the twin-screw steamer *Alacrity*, blown ashore in 1931;
- Wreck 3 the three-masted wooden schooner *Abemama*, blown ashore in 1927;
- Wreck 4 a scattered wooden wreck believed to be the *Gemma*, beached in 1893;
- Wreck 5 a site believed to be one or both the iron ex-sailing vessels *Conference* and *Herschell*;
- Wreck 6 a site thought by many to be rubbish or a modern iron-framed barge or boat launching cradle;

Shipwrecks in Jervoise Bay

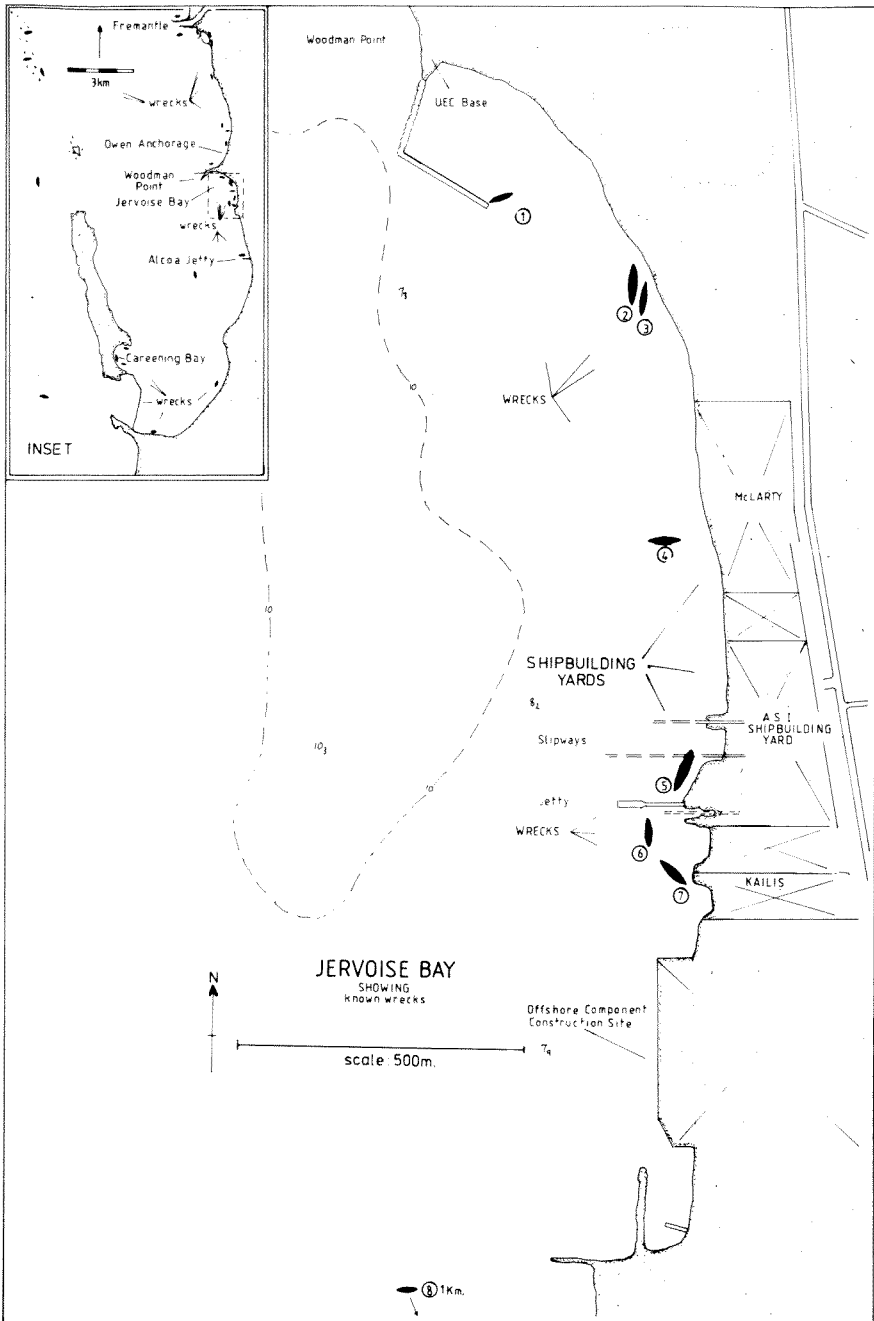


Figure 2 Jervoise Bay showing the endangered sites.

- Wreck 7 a wooden wreck under a large ballast mound, possibly the hulk
Redemptora;
Wreck 8 a small wooden wreck near the Alcoa Jetty.

The Search for Wrecks

An underwater search for known sites was conducted on weekends by volunteers from the M.A.A.W.A.⁵ This search was conducted on a 150 m wide strip running along the shores of the bay, there being little likelihood of a vessel being wrecked or scuttled in the deeper water. Aerial photographs were also studied and all but two of the known wrecksites were seen as distinct outlines or as changes in the appearance of the sea floor. Despite an extensive search, the M.A.A.W.A. found only the eight wrecks previously known and all lay within 60 m of the shore on a sand bottom and in depths between 2 and 5 m of water. Seven of the sites lay in the area of proposed development and were therefore seen to be at risk.

Archival Research and Site Analysis

At the conclusion of the archival search, only two of the eight sites (*Abemama* and *Alacrity*) were positively identified with at least 13 vessels remaining as possibilities for the other six sites. Of these 13, one wreck (*Gemma*) was recorded as having been scuttled in the bay itself and two others (*Ellen* and *Camilla*) were recorded as having been abandoned in the area but not specifically in the bay.

In an attempt to match the archival evidence with the physical remains, each individual site was then photographed and measured for length and breadth. Plans were drawn and site conditions assessed, physical features were noted and samples of fastenings and timbers taken for analysis. Identification of each site was then attempted by comparing the physical evidence with information from archival and other sources. Each wrecksite was approached in a manner consistent with its position, characteristics and content. The techniques used in identifying and assessing each site are varied and become evident in the following site analysis. In cases where sites (e.g. Wrecks 4, 6 and 8) could not be conclusively identified, the details of all vessels possibly constituting that site are given with reasons (if any) for considering any one ship the most likely of those considered as possibilities.

Wreck 1: The Submarine *K VIII*

Submarine *K VIII* details:

Launched at Flushing 15 September 1922

Dimensions : 64.1 m x 5.6 m, draught 4.1 m

Displacement : 520/715 tons and 583/810 tons full load

Engines : Two 2-stroke MAN diesels of 1400 hp
Two electro-motors total 630 hp twin screw

Speed : 15 knots surface and 8 knots under water

Armament : One 12.7 mm machine gun, four 45 cm torpedo tubes,
6 torpedoes, 1 x 8.8 cm gun

Wrecked : 1943

According to the records of the Naval Historical Department of the Royal Netherlands Navy, H.M.N.S. *K VIII* sailed for the Netherlands Indies in 1923 with *K II* and *K VII* and in 1926 voyaged with the *K II*, *K VII* and *K XI* to Manila, the Philippines and back. The vessel was held in reserve in Surabaya at the outbreak of war with Japan in 1941. She was recommissioned in 1942 and after a number of patrols, left Surabaya for Fremantle arriving on 17 March 1942. On arrival, she was not considered of value as an operational unit and was de-commissioned on 8 May 1942 and then sold for scrap in August 1942. She was eventually abandoned in 1943 in Jervoise Bay after being partially stripped. Her 220 V, 2200 amp main electro-motor was removed at that time and until recently was used to supply DC power to ships on the main Fremantle slipway.

Her conning tower was also removed and fitted to the pilot boat *Lady Forrest*, to be removed when that vessel was put on display at the Fremantle Museum. In 1957, a decision was made to remove the wreck and salvage diver T. Sullivan and his crew destroyed the submarine with explosives in that year. According to the diary kept by Mr Sullivan, the remaining sections were dragged ashore or lifted on to a barge and sold for scrap.



Figure 3 *K VIII* in the early stages of demolition. Sullivan Collection.



Figure 4 The bow of *K 8*. Sullivan Collection.



Figure 5 The *K XI* being salvaged after sinking in Fremantle harbour. Photo: Mrs Sweetman.

There was initially some confusion with the *K VIII* and the *K XI* (another Dutch submarine) as both vessels were dismantled at Fremantle and many local people believed that the Jervoise Bay wreck was the *K XI*. The *K XI* was in fact scuttled in 1946 at the Rottneest Graveyard in latitude 32°04'S, longitude 115°22'E.⁶ A comparison of the bow of the Jervoise Bay wreck and that of the *K XI* shows that the two vessels were substantially different. The salvor's diary, contemporary photographs and a comparison of these with naval records, notably *Janes Fighting Ships*, proves the issue beyond doubt.⁷

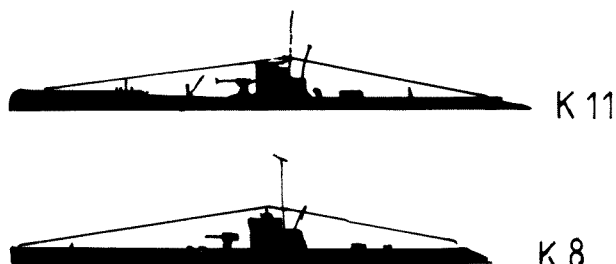


Figure 6 Silhouettes from *Janes Fighting Ships* showing *K XI* and *K VIII*.

The wrecksite is little more than an unrecognizable spread of twisted metal over an area of 61 m x 10 m. The only relatively intact section is a portion of double hull measuring 10 m x 5 m. The wreck lies on an east-west axis in about 7 m of water and has little to offer archaeologically or visually. The photographic and historical record that has been prepared is considered all that is now left of value to the public in general and to the diving fraternity. Excavation of the site was not considered to be a useful exercise due to the extent of demolition work and the scant remains.

Wreck 2: *Alacrity*

Moving south, the next wreck is that of the *Alacrity*.

Alacrity (ex *Jean Bart*)

Official number : 07685

Construction : Steel, twin-screw, two decks, tug

Dimensions : Length 145.6 ft (44.4 m), beam 27.1 ft (8.3 m), depth 13.5 ft (4.1 m)

Tonnage : 353 tons gross, 349 tons underdeck, 32 tons net

Rig : Rigged as a ketch. Top speed 12 knots

Built : 1893 by the Societe Anonyme des Forges et Chartiers de la Mediterranee, at Havre, France

Engines : Two triple expansion engines each with cylinders of 15 in. (32.1 cm), 23 in. (58.4 cm) and 35½ in. (90.17 cm)

diameter with a stroke of 23½ in. (59.7 cm) developing
122 hp.

Wrecked : April/May 1931⁸

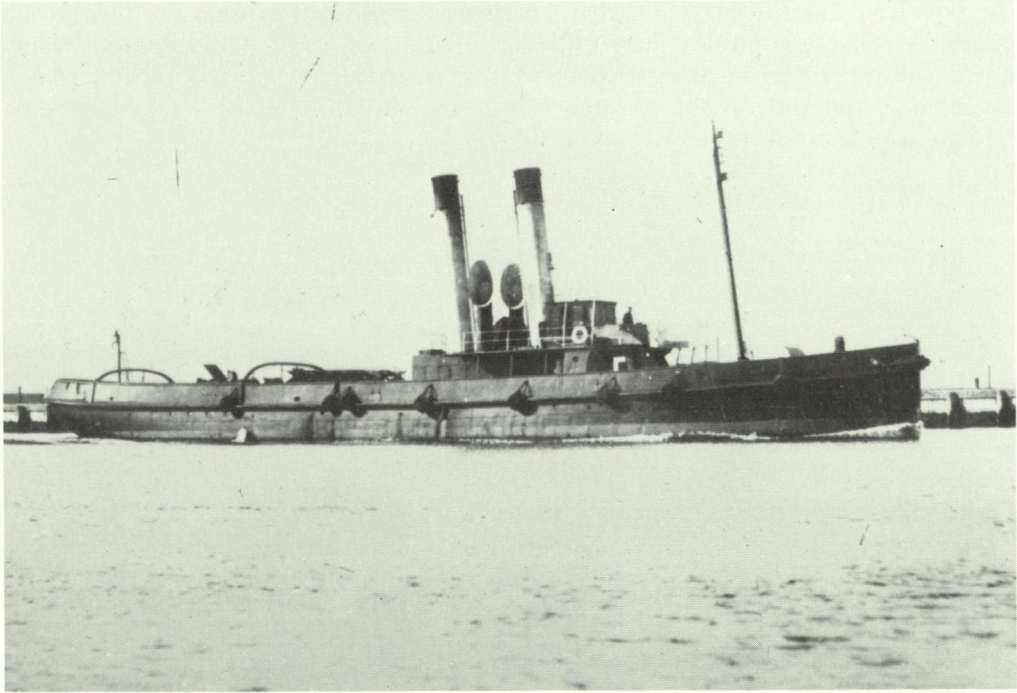


Figure 7 The *Alacrity*. Richard McKenna Collection.

Purchased by Howard Smith and Co. of Melbourne, the *Alacrity* first appears in the Fremantle Shipping Register in 1902. The vessel was then acquired by the Department of Naval Works and was used during World War I as an unarmed patrol vessel in the Indian Ocean and as a tug in Fremantle Harbour. She stayed with the Navy and in 1919 was involved in the transport of Admiral Lord Jellicoe in his inspection of Cockburn Sound as a potential naval base. She was involved in the preparation of the Jervoise Bay area for the Henderson Naval Base and was thus employed when all further work on the base was abandoned.⁹

Responsibility for the disposal of the Henderson Naval Base plant ashore and afloat was vested in the Minister for Works and Railways who referred the question of the disposal of *Alacrity* to Cabinet. They decided that the vessel be submitted for sale by auction on 16 December 1925, together with surplus dredging equipment.

She was bought by A.E. Tilley and Co. and in 1931 was sold to the wrecking firm of J.E. Hall, Machinery and Metal Merchants of Fremantle. A short time later

in April or May of that year, the *Alacrity* broke away from her mooring and drifted ashore to where she now lies.

The wrecksite measures 44 m x 10 m and lies in about 3 m of water, 50 m from shore on a north/south axis. In contrast to earlier years only a small portion of the wreck breaks the surface and the majority of the hull beyond the turn of the bilge has collapsed. The site was a favourite haunt of young children and beachgoers till the dredging undertaken for the construction of the oil rig *Ocean Endeavour* undermined the site and caused the shoreline changes that have now left the wreck about 50 m out to sea.



Figure 8 The *Alacrity* during dredging activity. Photo: Jon Carpenter.

In comparison with the earlier years the wreck is no longer a visual or recreational attraction to shorebound visitors. There is little of value on the site due to its accessibility, though it is an interesting and relatively safe wreck for the diver in calm conditions with an offshore breeze.

A series of photographs of the vessel when operational, laid-up and ashore has been prepared along with a selection of underwater slides and photographs.

Detailed measurement of the site appears of little value due to the spread of collapsed material, and the extensive hull corrosion.

A number of items have been earmarked for recovery and possible display.

Wreck 3: *Abemama*

The next wreck south is that of the *Abemama* and though this site lies only about 8 m to the east of the *Alacrity* and slightly south, it was often totally covered with a protective layer of sand (see Figures 8, 12).

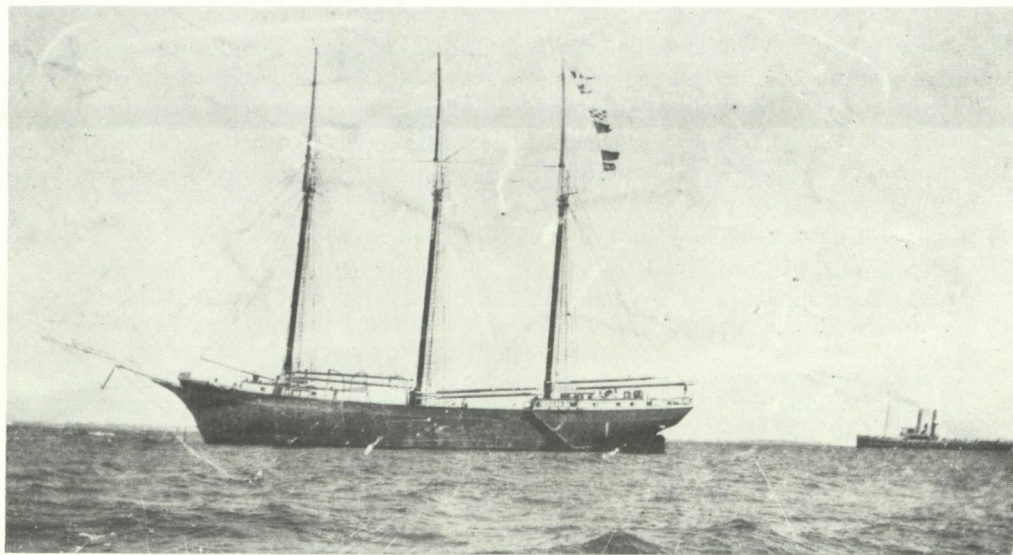


Figure 9 The *Abemama* at anchor — the vessel in the background is the *Alacrity*. Photo: Mrs A. McGhie.

Details of the *Abemama* are as follows:

Official number : 138200

Construction : Wood. Iron fastened. Single deck. Poop and deck houses, elliptical stern, carvel plank

Dimensions : Length 133.6 ft (40.7 m) x beam 32.6 ft (9.9 m) x depth 12.2 ft (3.7 m)

Tonnage : 395 tons (gross), 317 tons (under deck), 337 tons (nett)

Rig : Three-masted schooner

Built : Liverpool, Nova Scotia by the S.B. and Transportation Company in 1918.

Wrecked : 27 June 1927¹⁰

History

In 1919 she was registered in Liverpool, Nova Scotia. Her owner was Yu Wing of Sydney, New South Wales. She was then purchased by the Patrick Steamship Company and in 1920 was registered under that company's name in Auckland, New Zealand.

She worked the Eastern States trade and gradually deteriorated, leaving the trade in 1923. She was recorded by the Albany harbour master in that year as arriving in a sorry state:

Schooner *Abemama* from Newcastle in distress with a loss of sails, sundries on deck and leaking.¹¹

Following repairs, she set sail for Fremantle and was registered there in 1924, her owner being G. Atkins of Adelaide. She plied between Point Cloates and Fremantle under a new owner and master and was sold in 1926 to the Abemama Shipping Co. of Perth. She was later involved in the construction of the Beadon Point Jetty. By 1927 she was idle and lay at North Wharf for several months. Later she was moved to an anchorage near the *Alacrity* in Jervoise Bay and the vessel placed in the care of Mr and Mrs A. McGhie.

Mrs McGhie described the loss of the *Abemama* thus:

We spent some months living on a sailing ship called the *Abemama* which was used in the construction of jetties in the N.W. Australia. Early in the year 1927, the ship was moved to an anchorage in Cockburn Sound where the Kwinana Refinery is now. We were moored to a ten inch link chain, put down by the navy. Everything was fine, we were very happy, Arnold looking after the boat and keeping up repairs.

Suddenly, on the 17 June, a terrible storm came up and we had a terrible day of rain and squalls. I was alarmed, but true to a sailor's tradition, my husband assured me that ships were human and they would not hurt anyone.

As dusk drew near the weather got worse. My husband said, 'Hughie (the wind), if you want to put us on the beach do it before dark.' After scanning the area of the storm he came to me and said he could see a break in the weather and only one more squall to go through — if we could get through that one we would be safe; but if we should go, it would only touch bottom and roll over. I was quite satisfied and thought he knew best. He put an anchor at the ready to let go quickly if the worst should happen. It was nearly 7 p.m. and I looked up to the sky praying as I did, and saw two stars shining so brightly, and said to my husband how lovely they looked, he said, 'yes, they are our lucky stars — one for you and one for me!' Then suddenly the squall broke in an 80 mile an hour gale and with a loud report the anchor chain snapped. Arnold said, 'My God! She has gone.' and rushed up to the front deck to let the anchor go to keep the ship's head into the gale so that it would not turn over.

I went to the side of the ship and just then saw sparks go over the side — I thought it was my husband, with a cigarette, gone overboard. I called to him, but the din and waves lashing us in all their fury prevented him from hearing me. In terror I thought I would jump over to be with him, when, to my relief, he came back from the front deck. Just then the ship thudded on the bottom and a terrible sick feeling came over me; the ship was being terribly pounded. I said I was afraid, and it was terrible. Arnold reassured me that all was well and that every bump we got put us nearer the beach. He was so calm and never once let me see he was worried. One sign from him would have been fatal for me as I knew he understood the ship and sea.

He was trying to let off distress signals, but could not manage it with the ship pounding and seas breaking over us. In the mean-time, I thought of the fire in the galley — so took two pieces of wood out of the stove to prevent fire spreading on ship; and in trying to throw them into the water I was dashed against the side and burnt my fingers. I spent a terrible time being thrown around the deck from side to side (which was about 50 feet). I looked and felt like a half-drowned rat. Then I managed to grasp an iron ring on the deck (used to lash timber down) and I just swung around on this — almost dying of thirst as I seemed to open my mouth as the waves came over and swallowed salt water. Arnold came along and said he thought we would be safe on board until morning. Looking at the sea and the angry waves along the shore, I said I was too frightened to leave and too frightened to stay.

Then the rigging came off the mast (112 ft high) and my husband realising the danger of it crashing, said we must leave the ship. I was shivering with fright – not cold. He poured 5 gallons of oil on the water over the side, then placed a planking stage and a rope ladder for me to climb over to jump into the 12 ft dinghy as it was lowered. I put my burnt fingers onto the top rung of the ladder then my weight on same and all the skin came off my fingers, but I never felt any pain. I was beyond that and all fear left me then, as I had quite made up my mind that we would die together. I jumped into the boat, my husband sliding down the rope that lowered it, then cut the same. Then we seemed to go right under the ship, but after a desperate struggle with the waves my husband got near the shore and jumped out and pulled me and the boat full of water as near to the sandhills as possible (into about 2 feet of water).

The sandhills were so steep I could not climb up, so I waded a little way and came to a crack in the hills and climbed up to safety. I fell over in the heavy sand, but I knew I had to keep going till I reached the light-house – about a mile away. All the time I was struggling along I was listening to hear the mast crash. I am certain if it had I would have died on the spot, so great was my fear. When I got to the light-house all I could say was 'Water!' – I was desperate for water. They knew what happened and the men went to the boat. I was still shivering with fright and begging for water, but the lady of the house thought only to get me dry and a hot drink. You will never know what that first drink of water meant to me. I stayed the night at the light-house and my husband walked the nine miles to Fremantle. Next morning the police helped us such a lot to get a few clothes as I was in borrowed ones.

All the fresh water in the ship had got salty. My husband had to stay on the shipwreck for some weeks dismantling same. I would not leave him so stayed on board. The pounding of waves and the bumping of the boat kept us from sleeping. So I managed to persuade Arnold to take our beds up into the sandhills for one night, however, it poured with rain and back we went. I was finally forced to leave the ship and live in town.

This deed of calm efficient seamanship was the means of saving two lives as five months later we had a little daughter.¹²

A few weeks later 'vandals' were reported to have set fire to the wreck and she was totally destroyed (Figures 11a and b).

The Site

The site itself is quite extensive, though as one would expect contains little other than constructional items. The wreck had been preserved under a layer of sand until the recent shoreline changes that resulted in the collapse of the *Alacrity* served to completely expose the *Abemama* for study and photography. It now lies in about 2 m of water, 30 m from shore.

An underwater excavation of the site was not necessary in view of the undermining caused by the storms and dredging and though this has been of great assistance for this study, the wreck may gradually disintegrate as it is no longer protected by the sand or the hull of the *Alacrity*.

The site lies on a similar though slightly converging axis to the *Alacrity*. There is about 8 m separating the two wrecks at the closest point. At one time the



Figure 10 The *Abemama* ashore. Sawday Collection.



Figure 11(a), (b) The burnt-out remains of the *Abemama* showing exposed deck supports.
Photos: Mrs McGhie

wrecks were even closer as evidenced by earlier photographs and one appears to have moved over the years.

A photomosaic and photographic elevation of the wreck has been completed and it is evident that the ship lies on its port side and that this side has been preserved to about the turn of the bilge and beyond by the sand cover. There is little of display value on the wreck excepting rigging and constructional fittings.

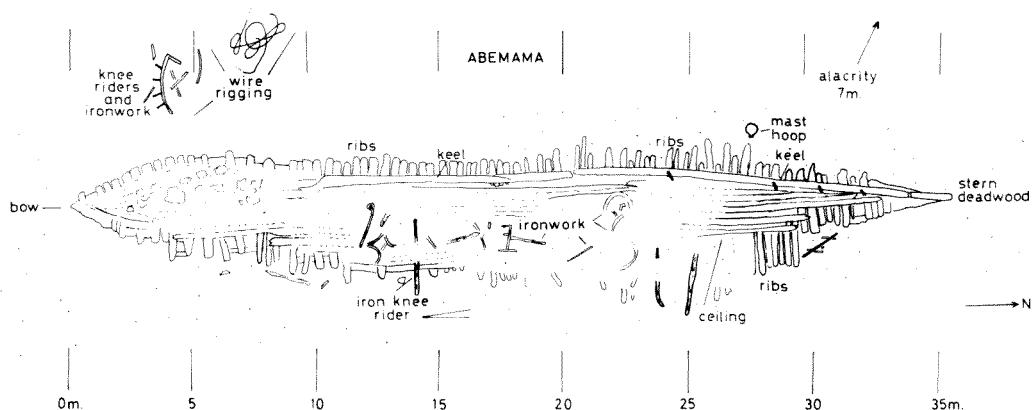


Figure 12 The *Abemama* wrecksite.

Some of the vessel's log books are housed at the Battye Library and the interview with Mrs McGhie was recorded. A collection of photographs has been assembled from Mrs McGhie's and other collections.

The wreck is of value from an educational point of view, as the *Abemama* is the only easily accessible and safe wooden sailing shipwreck available for study in the metropolitan area. She is one of the last sailing ships to be wrecked on this coast and represents a late stage in North American sailing ship construction. Indeed, the whole *Alacrity/Abemama* complex is a valuable recreational and educational asset. The site has been used by students in the Post Graduate Diploma course in Maritime Archaeology at the Western Australian Institute of Technology as a major field practical, and numerous project reports have been filed at the Western Australian Museum.

Wreck 4: ?*Ellen*

The next wrecksite south is what was formerly known as the *Redemptora*, and then later the *Gemma* site, and as such was the subject of an extensive survey by an Underwater Explorers Club team under the late Mike Pollard. Mr Pollard produced a model of the site in 1971 and a comparison of this three-dimensional representation and Figure 13 below emphasises the extent of the further disintegration in the eight-year period.

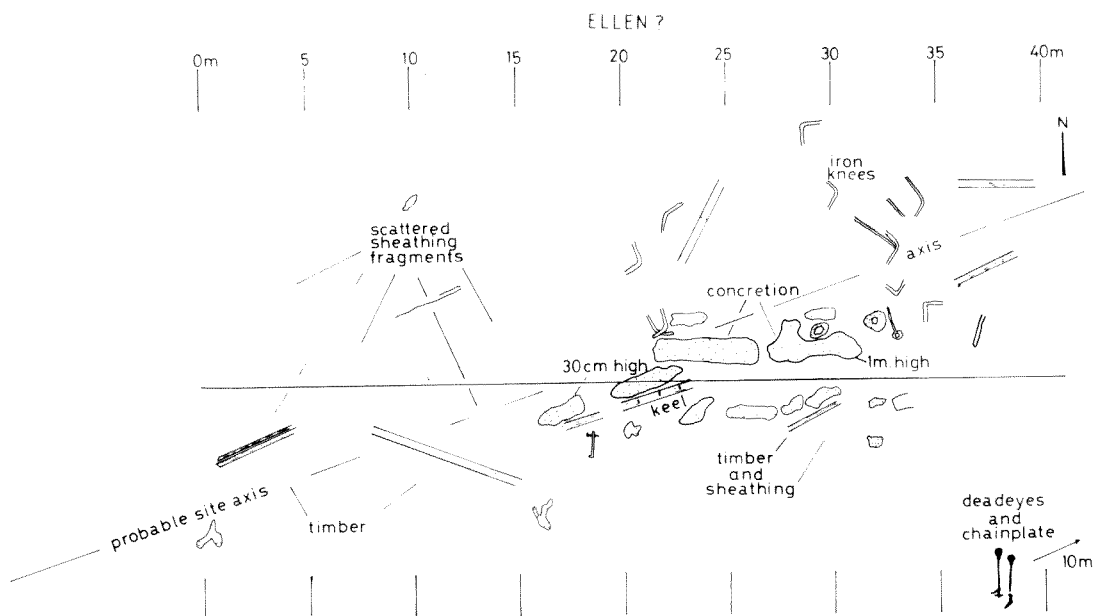


Figure 13 The ?Ellen site.

The wrecksite is very scattered and as it lies in c. 2.5 m of water, within the wave line, is subject to a moderate swell in winter storms. As to be expected of an easily accessible hulk, the site is quite sterile though there are some constructional fittings in the sand over-burden. Random excavation using a small 10 cm diameter airlift, connected to the hookah unit was undertaken in an unsuccessful attempt to find solid hull structure amongst the few scattered timbers remaining. Despite this, enough information on the site was collected to show that the wreck was built of wood, was fastened with iron and yellow metal and had some iron deck knees. The presence of further fittings in the vicinity of the wreck is evidenced by the complete sets of dead-eyes and chain plates found just off the shore. A keel bolt diameter of 1 inch (2.54 cm) and keel size of 12 inches (30 cm) square indicates a vessel of 300-350 tons with an indeterminate length due to the wreckage spread.¹³

Various timber samples were taken and submitted to the Commonwealth Scientific and Industrial Research Organization (CSIRO) for analysis and proved to be:

Treenail	<i>Pinus ponderosa</i> (western North America)
Unknown	<i>Pinus resinosa</i> – Red or Norway Pine (eastern North America)
Keel	<i>Pseudotsuga menziesii</i> – Douglas Fir (western North America)
?Keel	<i>Betula</i> sp. – Birch (common to Europe and America)
?Keel	<i>Betula</i> sp. – Birch (common to Europe and America)
?Keelson	<i>Betula</i> sp. – Birch (common to Europe and America) ¹⁴

Apart from the treenail, an identification of each timber as a specific constructional unit was difficult and they are, therefore, labelled as unknown or with a query. Indications are, however, of an American-built vessel.

The timber sample therefore tends to eliminate the *Gemma* which was known to have been beached in the bay but was German built. There was substantial trade in timber from America to Europe, however, and though this complicates the issue it is unlikely that all the timbers including the treenail would have been imported and the wreck, therefore, is most likely that of an American-built vessel.

The remains of seven American-built vessels lie in close proximity to Fremantle. Four of those wrecks have to date been identified, i.e.

<i>Day Dawn</i>	ex-whaler <i>Thomas Nye</i> , c. 1886
<i>Alex T. Brown</i>	American four-masted schooner, 1917
<i>Abemama</i>	American three-masted schooner, 1927
<i>Redemptora</i>	An American-built vessel of 1,235 tons wrecked between 1890-1910

Three others, *Harrison*, *Annie Lisle* and *Ellen* await identification, with only the *Ellen*, *Abemama* and *Redemptora* as known losses in the Jervoise Bay area.

It appears likely then that the wrecksite is that of the *Ellen*, being the only medium-sized North American-built vessel apart from the *Abemama* known to have been recorded as lost or abandoned in the area (*Redemptora*, as will be seen, is too large). The timbers used in the *Ellen* match those of the sample with one major exception, the presence of Douglas fir in the sample and tamarack (larch) on the *Ellen*. This anomaly cannot be totally discounted however, as the other two American-built hulks, the *Annie Lisle* and *Harrison* are yet to be identified. Their details are as follows:

Annie Lisle

Official number	: 52359
Construction	: Wood, part iron bolts, single deck, round stern, felt and yellow metal sheathed.
Dimensions	: 139.9 ft (42.6 m) x 26.3 ft (8.0 m) x 12.72 ft (3.8 m)
Tonnage	: 347.42 tons gross, 297.73 tons net
Rig	: Three-masted barque
Built	: 1865 by P.G. Labbee of Quebec, Canada
Scuttled	: Unknown ¹⁵

Her early history is not known though she is recorded as transferred to London in 1865 and sold to Captain W. Hayes for coastal trading in that year. In 1887, she was badly damaged in a collision with S.S. *Australind* and she was sold at auction for £42 with her gear fetching £98. In 1889 she is referred to as a hulk coming up from Rockingham with sand ballast for another vessel. In 1891 she is recorded as unfit to carry perishables and thereby being forced to carry iron and coal only. She is mentioned in 1910 as a local wreck but the date and place of

abandonment is not reported.¹⁶ Her figurehead was found on Rottneest Island after her collision in 1887 and is now on display at the Port Adelaide Nautical Museum.

Harrison

Construction	: Wood
Dimensions	: Unknown
Tonnage	: 348 tons
Rig	: Three-masted schooner
Built	: Probably U.S.A.
Registered	: U.S.A.
Crew	: Nine. Master H. Godfrey
Scuttled	: Unknown ¹⁷

She arrived in Fremantle on 12 January 1877 from Adelaide with a general cargo, left in ballast for Bunbury and arrived back in March of that year with timber and in a leaking condition. After survey in Careening Bay she was condemned and converted into a hulk. She was replaced by the *Egmont* in 1892 and then presumably disposed of by scuttling.

Ellen

Official number	: 35550
Construction	: Iron and yellow metal fastenings, timbers of birch, tamarack and red pine, wood hull with part iron bolts, square stern.
Dimensions	: 105.0 ft (32 m) x 24.9 ft (7.5 m) x 13.2 ft (4.0 m)
Tonnage	: 242.61 tons gross, 229.29 tons net
Rig	: Brig
Built	: 1857 at Bathurst, New Brunswick as No. 15 of 1857. Registered at the Port of Miramichi. Owner (64 shares) J. Meahan, a shipbuilder of Bathurst.
Owners	: 1861, Anderson (registered Liverpool); 1870, Marshall and Lilly (registered Melbourne); 1883, Adelaide Steamship Company.
Scuttled	: 18 March 1890 ¹⁸

She was built on speculation and her registry was transferred in 1857 to Liverpool, England and then to Newcastle, New South Wales. In 1874 she was involved in the coastal trade and is reported at Rockingham taking on a cargo of jarrah for Melbourne after discharging coal. It appears she continued in the same trade as she is reported arriving in Albany in 1878 with coals from Melbourne. In that same year she left Champion Bay with a cargo of lead for Melbourne but was forced to put into Albany for repairs. In 1882 she is mentioned as a hulk operated by the Adelaide Steamship Company who continued coaling operations at Albany

after the closing of the P & O Depot there. The Adelaide Steamship Company minutes of 1883 record the receipt of a bill of sale for the hulk *Ellen*.

In 1890 she appears in the *West Australian* newspaper as the *Helen*:

The hulk *Helen* belonging to the Adelaide Steamship Company has been examined by a diver and found to be unfit for further use. She has been condemned and will probably be sold.¹⁹

The Adelaide Steamship Company did not own an *Helen* in Western Australia and this reference almost certainly refers to the *Ellen* which is recorded in the Harbour Master's Journal in 1890 as:

Coxswain Stewart engaged in taking hulk *Ellen* to Woodman Point to be abandoned.²⁰

(Woodman Point is the north arm of Jervoise Bay.)

The Underwater Explorers Club, under M. Pollard, conducted an unsuccessful search of the northern shore of Woodman Point for the *Ellen* and found instead, the *James Matthews* (1841).

It is thought unlikely, however, that the harbour master would have allowed a vessel to be deliberately scuttled on the northern shore of Woodman Point as she would be a danger to vessels blown ashore from the Owen Anchorage area immediately to the north (Figure 1). The wreck, therefore, is presumed to lie to the south of Woodman Point, in Jervoise Bay.

?Ellen/?Annie Lisle/?Harrison

Apart from the known scuttling of *Ellen* on or near Woodman Point, there is little to go on in matching the site with any of the three American-built vessels.

Site length is of little use due to the effects of wave action and all three vessels could have been fitted with iron knees. The *Ellen* wrecksite match with birch and red pine is promising but not conclusive.

Another unidentified American-built vessel was found in Careening Bay in 1973 of length in excess of 100 ft (30 m), an indicated tonnage of 300-400 tons and of a mid to late 19th century period. Large quantities of coal from New South Wales were evident throughout, and a timber analysis showed:

Pinus ponderosa : (western North America)

Robinia pseudoacacia : Black Locust (eastern and central North America)

No ironwork was evident on site and no valid conclusions about its identity can be made at present.

There is still a possibility that the Underwater Explorers Club missed the *Ellen* on Woodman Point and if that is so, then the indications would be that the Jervoise Bay wreck is the *Annie Lisle* (a 'local' wreck) and the Careening Bay site the *Harrison* or vice versa.

Till that time Wreck 4 in Jervoise Bay should be known as 'Jervoise Bay unidentified, number one, possibly *Ellen*'.

Wreck 5: *Egmont*

The next site was until the latter part of this study, known simply as the 'iron wreck'.

Local historians believed the site was either or both the hulks *Conference* or *Herschell*, both ex-sailing vessels whose ultimate fate was then unknown. *Conference* however, is now known to have been scuttled north of Fremantle and *Herschell* is recorded as scuttled on Inner Island, Albany on 2 July 1908.²²

The 'two wreck' idea was eliminated by length and breadth measurement though the site was very confusing and widespread. On inspection, certain anomalies became apparent, with the stern section appearing to fit more a screw-driven vessel than a sailing ship. It was also decided in view of the sterile nature of the site to use a 60 cm diameter propellor wash to excavate instead of the more gentle 15 or 10 cm airlifts used on other sites.

The Museum's workboat *Beagle*, was manoeuvred and anchored fore and aft over the site. The propellor wash was attached and at 1000 rpm in 3 m of water, the blast effectively cleared areas of about 2 m square to a depth of 1 m, sufficient in the four test holes dug to show that apart from being a sterile site, the wreck was an ex-steamer used for the storage of coal and not a sailing vessel as previously thought.

Detailed measurement and drawing of the site were not seen to be a valid exercise and the following drawing from an aerial photo is considered an adequate substitute in view of the financial and temporal constraints imposed on the study.

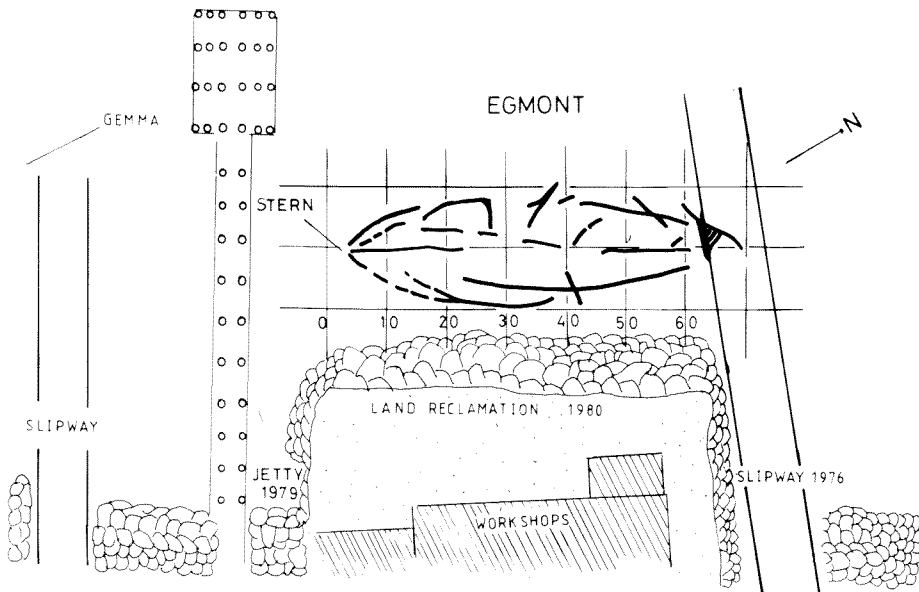


Figure 14 The *Egmont* site. From an original by Don Edwards, M.A.A.W.A.

The drawing shows the difficulty experienced in attempting to quickly illustrate a collapsed iron and steel site when underwater. The spread of the vessel's hull both inward and out makes an accurate assessment very difficult. This type of drawing is an interesting solution and perhaps is all that is necessary in the circumstances prevailing here.

Having established that the vessel was formerly a steamship, a search of available records showed that two hulks of this category, *Gunga* and *Egmont* were possibilities.

The steamer *Gunga* was built for the Australian Steam Navigation Company in 1864 and was a 1257 ton brig-rigged vessel of 257 ft (78 m) in length.²³ After being of no further use as a steamer, she was dismantled and converted into a hulk and towed to Fremantle. Eventually, she was considered redundant and is recorded as having been stranded on a beach near Fremantle around 1920.²⁴

Egmont is also recorded as a cargo steamer in the coal trade 'until comparatively recently when she became a hulk in Sydney Harbour'.²⁵

The identification of the site, therefore, appeared resolved as *Gunga* until the wrecksite was measured at 65 m (213 ft). It therefore appeared that the site could not have been the *Gunga* and on length measurements and other details the wreck appeared to be the *Egmont* which had previously been reported as the first ship scuttled off Rottneest.



Figure 15 The *Egmont* from a contemporary drawing.

Having deduced that the wreck was most likely the *Egmont* a contact with her former owners, the Adelaide Steamship Company was established, and their historian, after a search of company records, replied giving details of the vessel's fate.

It appears that on 31 March 1910 the company was informed that the *Egmont* had been dismantled and abandoned. When she was slipped in 1909 she was found to be in such a bad condition that she was condemned. After all the gear, winches, boilers, etc. were removed, she was scuttled by dynamiting off Clarence Rocks (Jervis Bay). From that time on she was virtually forgotten and was evidently further demolished in the retrieval of salvageable metals and decking and the more recent construction of a slipway at Australian Shipbuilding Industries (see Figure 14).

The history of the vessel is as follows:

Official number	: 50039
Construction	: Iron, single-screw, 1 deck, 4 bulkheads
Dimensions	: Length 171 ft (52.1 m), beam 25.3 ft (7.7 m), depth 12.2 ft (3.7 m)
Tonnage	: 401 tons gross, 309 tons net
Rig	: Brig rig
Built	: 1864 at Renfrew by Henderson Coulborn and Co. Port of registry – London. Original owners Panama, New Zealand and Australian Royal Mail Co. Ltd.
Engines	: Compound steam, 2 cylinder, 80 hp. ²⁶

She was rebuilt in 1875 and is registered in Lloyds 1888 with the following dimensions:

200 ft (60.9 m) x 24.8 ft (7.5 m) x 18.3 ft (5.5 m)
419 tons net
670 tons gross
670 tons under deck
Schooner rig
Engine 100 hp, 2 cylinder compound

After five years with the Panama New Zealand and Australian Royal Mail Company, she was sold to the Australasian Steam Navigation Company and operated on the Queensland coastal trade. She was lengthened at Pymont, Sydney and in 1886 was taken over with her parent company by the Australasian United Steam Navigation Company. She was converted to a hulk in 1892 and then passed through a number of hands till she was acquired in 1900 by the Adelaide Steamship Company. She was used as a coal hulk at Fremantle, being scuttled in 1910 at Clarence in Jervis Bay.

On the basis of the match of *Egmont's* final length with the Clarence wreck-site and on the additional strength of the Adelaide Steamship Company's records, it is reasonable to conclude that this site is *Egmont* and not *Gunga*.

Wreck 6: *Gemma*

Of all the sites assessed, this particular site which forms the apex of a triangle between the *Egmont* and the Wreck of Stones is perhaps the most perplexing.

Many doubted whether this was a wreck at all. No timber structures were visible in the thick weed growth that almost covered the scattered iron wreckage. M. Pollard maintained a continued interest in the site, despite the early scepticism. He was convinced the site constituted a wreck and his original description of the 'Apex' site (as he called it) was of a small vessel with heavy iron frames, some of which stood off the wood-covered bottom. He also recorded a pair of four-spoked wheels (possibly a pump crank) connected by a two-bearing crankshaft. These lay amidships and projected about 1 m from the bottom. Both the weed growth and the wheels have now disappeared. A large iron windlass with a wooden barrel and iron whelps was located at the northern end of the site and an anchor chain led 50 m north from this to a small section of the starboard bow of the vessel (measuring 1.75 m x 0.55 m). This section contained a hawse pipe, a bollard and fairlead. Random airlifting of the main site using a hookah-powered rigid 10 cm pipe revealed extensive timber remains throughout the site. This and the spread of the ironwork warranted further investigation and a series of test excavations were planned.

The small aluminium workboats previously used were substituted by the Museum workboat *Henrietta* on which was mounted a 1200L/minute compressor connected to two semi-rigid 12 cm airlifts.

Five shallow trenches were dug across the wreck and a photomosaic and drawing taken of each excavation.

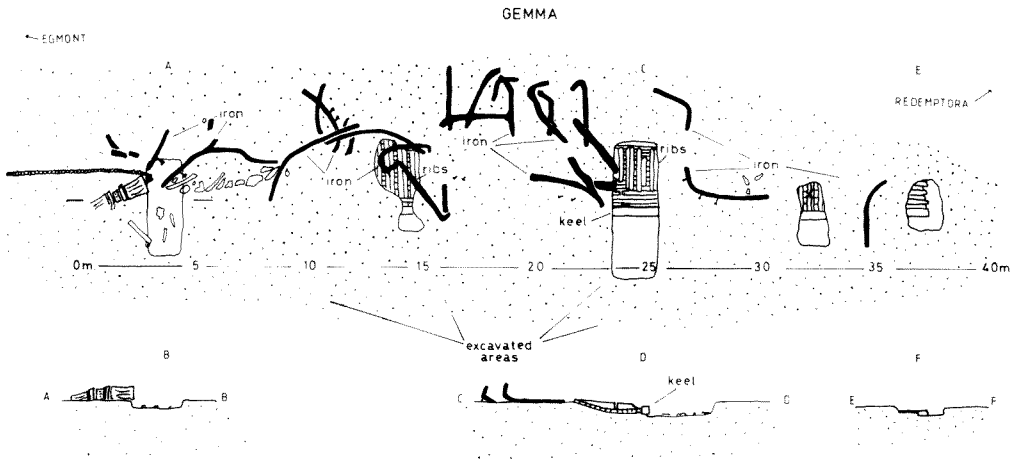


Figure 16 A drawing of the 'Apex' site.

The extent of the wreckage (36 m x 7 m) and the spread of timber can be seen (Figure 16) and it is evident that the vessel lies on its starboard with most of

the port side gone. Further hand fanning of the area under the ironwork revealed more timbers and at its maximum spread there appears about 7 m of the port side planking and ribs remaining. The ceiling and keelson have been dispersed in storms or destroyed by worm infestation.

All the ironwork is situated on the starboard side of the keel as one would expect if the vessel went down with a large list to that side. The standing ironwork and the spread of wreckage on one side of the keel was not unusual, but the keel lay almost vertically upright and an attempt to explain this interesting feature of the wreck is shown below:

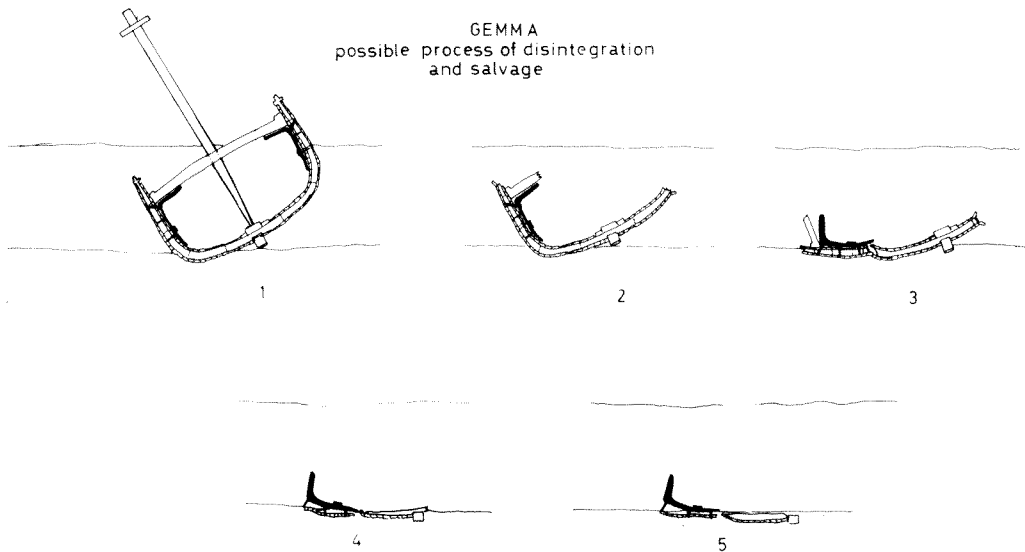


Figure 17 A series of sketches representing the process of disintegration of the wreck.

The series shows a section of the vessel and a gradual process of disintegration (or salvage). The upper ironwork could have been salvaged or fallen towards the centre of the site and is not shown after the first sketch. The process of flattening of the timbers leaving the hanging knee standing and the keel almost vertical is then shown.

A yellow metal bolt 58 cm long, diameter 2.5 cm (1 inch) was recovered from the site and inspection of the clinch ring showed the figures '1 1/8' impressed into the upper surface. Measurement showed that this referred to the inner diameter of the ring but no valid conclusions could be made due to the small difference between the English, German and Amsterdam inch (a difference too small to be detected on the internal diameter of the corroded ring).²⁷ An analysis of the composition of the bolt was also undertaken and showed a composition most like a

medium leaded brass, that is a copper, zinc and lead alloy. This and other fastening sizes, e.g. butt bolts of 11/16 inch (1.8 cm) diameter indicate a vessel in the 300 ton range.²⁸

Timber analysis conducted by the Wood Quality Group of CSIRO showed the following:

Ceiling	<i>Pinus sylvestris</i> – Scots Pine (central Europe)
Keel	<i>Ulmus</i> sp. – possibly European Elm
Plank	<i>Pinus sylvestris</i> – Scots Pine (Europe)
Treenail	<i>Eucalyptus</i> sp. – eucalypt (Australia)
Rib	<i>Picea</i> sp. – Spruce (Europe and America)
Unknown	<i>Ulmus</i> sp. – possibly European Elm

It is evident from the timber analysis, therefore, that the wreck was that of a European-built ship possibly repaired somewhere in Australia (eucalypt treenail). The possibility of the treenails being imported to Europe makes the latter conclusion only tentative however.

There are no European ships apart from the *Gemma* known to have been sunk in the region of Jervoise Bay, but the *Amur* was seen as a distinct possibility in view of its circumstances, timber analysis and large amount of ironwork present on site.

The details of *Amur*, ex *Agnes Holt*, are as follows:

Official number	: 7645	Classed as experimental, subject to biennial survey
Construction	: 1 deck, 3 masts, round stern, carvel-built, woman figure-head.	Keel: English and American Elm. Stem and stern-post: English Oak. Knees of iron plates, all the bolts of yellow metal. 'This vessel is fastened entirely with yellow metal outside except the flat of floor which is treenailed. There are 14 pairs of iron straps 4 ft x 8/11 inches (122 x 1.84 cm) placed diagonally outside the frame 5 ft 6 inches (1.67 cm) part-riveted to each frame.'

Lloyds Register

1865 shows	: 'Frame part iron, with iron beams.'
Dimensions	: 112.9 ft (34.4 m) x 24.3 ft (7.4 m) x 11.9 ft (3.6 m)
Tonnage	: Old 292 tons, new 235 ⁶⁷ / ₁₀₀ tons
Built	: Sunderland, Durham, 22 November 1862
Owners	: Bateman, Pearse and Marmion
Port of registry	: Fremantle
History	: The <i>Amur</i> was originally purchased by Pearse and Marmion of Western Australia to help establish a whaling enterprise. She was afterwards a regular visitor to the port and operated to a variety of areas – interstate, Mauritius, Singapore, etc.

She has more than a local interest, however, being an early 'composite' type vessel.³⁰ Her builder G.S. Moore was the successful applicant in the case *Jordan v. Moore* of 1865 concerning the extension of the Jordan patent and of royalties for composite shipbuilding.³¹

The *Amur* it appears, was not a true 'composite ship' however, and fits more closely a transition from the all-wood to composite. The *Annals of Lloyds Register* explains this gradual change more clearly:

The first composite ship to appear in the Register Book . . . was entered in the edition for 1851 with the notation 'iron frame planked' . . . in 1860 . . . the experience of the committee with this type of ship . . . led them to regard composite vessels as experimental . . . subject to biennial survey . . . various modes of construction were at first proposed. Some of the vessels had wood floors and iron angle frames . . . or some equally novel sectional form; many variations also existed in the modes of fastening.³²

The *Amur* was built in 1862 but the rules for composite ships were not issued till 1867, and as the *Annals* point out 'nearly every composite ship since built has been constructed in accordance with their provisions'.³³

The length, wooden floors, treenails, predominantly yellow metal fastenings and timber analysis fit the site as does the 'part iron frame with iron beams' description in *Lloyds Register*.

On the other hand, the fourteen pairs of iron straps 4 ft x 8/11 inches (122 x 1.84 cm) placed diagonally outside the frame 5 ft 6 inches (167.5 cm) are not evident but the majority of the ironwork present is part rivetted to each frame.

Eventual Fate of *Amur*

The *Inquirer* of June 1887 notes:

The barque 'Amur' stranded at Rockingham has been visited by Captain O'Grady. He reports her on the beach about three quarters of a mile north of Rockingham and is apparently injured.³⁵

The *Amur* was subsequently refloated, for a search of the contemporary *Shipping News*³⁶ shows she is recorded from 6 July 1888-15 February 1888 under the heading 'Vessels in Harbour' as '*Amur* laid up', suggesting that the vessel was afloat but inoperative.

The *West Australian* newspaper of the same period shows that the ship was laid up at Rockingham. The vessel then disappears from the records though her register was closed on 12 December 1890 with the following comment:

This vessel was stranded on the beach near Rockingham, Fremantle Harbour, about two years ago, and has since been abandoned.³⁷

She was fastened entirely with yellow metal, and her abandonment would have likely been followed by subsequent heavy salvage for her valuable fastenings. If she was afloat, her owners would have been required to move her to an area away from shipping, and the nearby graveyard including Jervoise Bay appeared a likely possibility.

Local residents, however, recall seeing the ribs of a vessel called the *Annie* or *Amur* north of Rockingham (just off Weld Street near the new Grain Terminal).³⁸ Thus, even though all protruding remains were removed by the 1950s, this lead must be considered a very promising one, especially in view of the proximity of the area to the stranding of the *Amur*. Until that site is located, however, the issue is still in doubt.

The details and history of the *Gemma* are outlined below.

Gemma (ex *H. Beenke*)

Construction	: Wood
Dimensions	: Length 120.4 ft (36.6 m) x beam 26.7 ft (8.1 m) x depth 13.5 ft (4.1 m)
Tonnage	: 318 tons gross, 306 tons net
Rig	: Brig
Built	: Elsfleth (on the river Aller between Bremen and Bremerhaven, Germany) in 1868 by J. Ahlers
Owners	: C. Bethell of London ³⁹

The vessel entered Fremantle under the command of E. Bolt on 10 January 1886 with a cargo of coal from Fleetwood, England. She was retained here for use as a hulk. In September 1886 she is recorded as 'grounded 150 yards from the new South Jetty', after having just loaded a cargo of grain and other perishables from the *Mary Blair*. On 29 September she was still aground and full of water, with the crew assisting the harbour master to heave her upright. From 1-6 October there was a team of divers working on her patching up her hull and on 21 October she was pumped afloat and towed to deep water and anchored. She appears to have operated without major incident till 15 August 1893 when she was scuttled in the bay:

Mr Butcher, to Careening Bay in *Flinders* and after discharge of the coals into the hulk from the *Gemma* towed the latter into Jervoise Bay where she was beached.⁴⁰

Small but significant quantities of coal have been found on site and the timber analysis fits a European-built ship such as the *Gemma*. We know the *Gemma* was repaired at Fremantle and that she was beached in Jervoise Bay. As the only other wooden sites in the bay have American timber, the *Gemma*/Apex link must be considered a strong one. The *Amur* is still a possibility but like the *Ellen/Annie Lisle* question, the former in each case is recorded as lost in the area and must be considered the more likely at present.

Wreck 7: *Redemptora*

The next wreck south is the Wreck of Stones being a large stone (ballast) covered site discovered by local divers in the early 1960s. In January 1978, members of the Maritime Archaeological Association of Western Australia began diving in an effort to survey and possibly identify the wreck. They reported that the wrecksite

was the remains of a wooden vessel at least 47 m in length carrying an estimated 200-400 tonnes of granite ballast.⁴¹ Several small pieces of coal were found amongst the stones but these and the few small glass sherds visible on the site were insufficient to enable any positive conclusion to be drawn. The drawing below shows the trench along the keelson caused by the vessel collapsing outwards as the hull weakened.

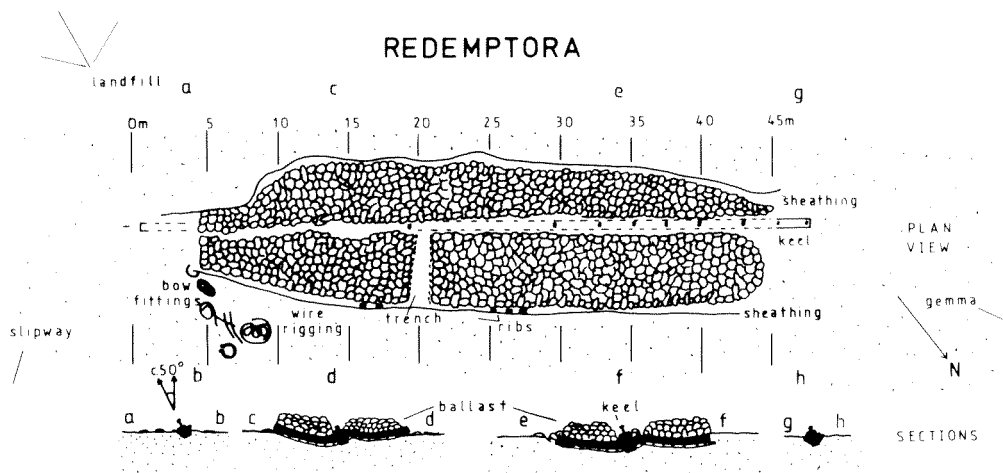


Figure 18 The Wreck of Stones from an original by R. Miners, M.A.A.W.A.

Although this survey also failed to positively identify the ship, the M.A.A.W.A. believed that it was the wreck of the American-built 1235 ton Brazilian ship *Redemptora* on the basis of an early personal communication to H. Roberts of the Underwater Explorers Club, which referred to the *Redemptora* being run ashore and burnt at Clarence in Jervis Bay.

The ballast mount length at 47 m was larger than the overall length of all the known wooden vessels lost in the area except perhaps the *Redemptora* itself and the Association's tentative match thus appeared reasonable.

In view of their identification of the site as the *Redemptora*, the Maritime Archaeological Association of Western Australia attempted no further excavation apart from a trench dug through the ballast to ascertain the extent of the timber remains. Apart from delineating the site, no other excavation was deemed desirable in view of the danger of interfering with the stable nature of the wreck, which should lie in its present undisturbed state for decades.

For the purposes of this study, however, a more positive identification was required, and to this end a timber sample was sent to CSIRO and appeared as follows:

- | | |
|----------|-----------------------------------------------------------|
| Keel | <i>Acer nigra</i> – Hard Maple (eastern North America) |
| Treenail | <i>Quercus</i> sp. – possibly Red Oak (America or Europe) |

Sacrificial	
wood	<i>Pinus strobus</i> – (eastern North America)
Frame	<i>Quercus</i> sp. – Red Oak (European or American)

Various fastenings and fittings were also measured and these, with the timber sample, indicated a large mid to late 19th century vessel probably built on the eastern seaboard of North America.

A comparison of these sizes with Lloyds minima of 1864 further indicated a vessel of the 12-1300 ton range, e.g.

Plank size	5 inches (13 cm)
Keel bolt diameter	1 ⁹ / ₁₆ inches (4 cm)
Butt bolt diameter	1 inch (2.5 cm) ⁴²

The twin hawses, 6 inch (15.24 cm) circumference rigging wire and 8 inch (20.3 cm) plank spikes add more weight to that analysis.

Apart from the *Redemptora* of 1235 tons but of as yet an unknown length, the only other known hulks of similar tonnage were the ex Blackwall Frigate *St. Lawrence* of 1131 tons gross and 179 ft (54.5 m) length and the *Zephyr* of 189 ft (57.5 m) and 1336 tons gross. Both of these vessels were scuttled at Albany on the south coast and therefore could not be considered as possibilities here.

The only conflicting factors then in a match with the American-built 1235 ton *Redemptora* were the large amount of ballast apparently left in a coal hulk to the detriment of her carrying capacity and an apparent keel length of only about 47 m (156 ft) which even with allowance made for fore and aft rake was too short for a vessel of *Redemptora's* tonnage.

Baker's *Maritime History of Bath Maine* records 11 vessels between 1000 and 1300 tons built in 1853 with lengths ranging from 176-198 ft (53-60 m).⁴³ In view of this discrepancy a further dive on site was completed in January 1982 and an excavation completed beyond the obvious keel remains.

The keel was seen to extend 8 m beyond that reported by the Maritime Archaeological Association of Western Australia giving a minimum keel length of 55 m (180 ft), with an overall length of vessel between perpendiculars of at least 60 m (c. 190-200 ft), i.e. well within the expected range.

As *Redemptora* is recorded as sunk in 1892 with 2300 tons of coal one can only assume the relatively large amount of ballast remaining (200-400 tons) did not materially affect her economic carrying capacity and was, therefore, left in place. Further research needs to be done in this area however.

The Wreck of Stones is then beyond reasonable doubt, the *Redemptora*. The wreck itself is almost totally covered with the ballast layer and as such, should remain thus protected for many years. When required, it would then be available for study by future generations.

History

The *Redemptora* left Rio de Janeiro in August 1888 bound for Adelaide with a cargo of sugar and coffee. She was a fully rigged ship of 1235 tons and a crew of 23. Her last voyage is recorded thus:

Arrival of a Brazilian Ship in Distress

About 4 o'clock on Sunday afternoon a large vessel was sighted from Rottneest, heading for Fremantle. She was boarded at 8 o'clock that evening by Pilot Butcher, when she was found to be the ship *Redemptora*, Captain Francisco Casavecchia, bound from Rio de Janeiro, Brazil to Adelaide. The Pilot brought the ship to an anchor during the night off the North Beach, and yesterday morning the tug *Dolphin* proceeded to the vessel and towed her to Gage Road, where she came to an anchor at 10.30 a.m. There is no one aboard who was able to speak English, but fortunately, Captain Casavecchia understands French, whereby he was able to carry on a conversation with Captain Russel, Chief Harbour Master. The *Redemptora* is a ship of 1,235 tons (Brazilian) register, and hails from Rio de Janeiro from which port she sailed on August 10, with a cargo consisting of 233 tons of sugar, and 200 tons of coffee, being consigned to Messrs. Charles Hart and Co., Adelaide. After rounding the Cape of Good Hope, when in latitude 42°S and 45°W., the *Redemptora* encountered a heavy gale which lasted four days, during which time the ship rolled very heavily and it was considered desirable to lower some of the spars, where-upon the main top gallant mast, main top mast, and fore top gallant mast, were struck. The ship, however, continued to roll and was making from five to six inches of water an hour. Having a donkey engine on board, this was kept going, whereby she was able to keep pretty free. Captain Casavecchia states that he put into Fremantle to ascertain whether his ship could be repaired here. She does not make much water when in smooth sea, but it is evident that the ship has been severely strained. The *Redemptora* is a wooden vessel, and was built 35 years ago in America. Lloyds surveyor, Captain Owston, will make a survey of the ship to ascertain the condition of her hull, and if found necessary, she will probably be condemned. As the ship stands at present, she draws 17 ft of water aft, and 16 ft forward. She is owned by Messrs. Granalli and Co. of Rio de Janeiro.⁴⁴

The hull was sold to J. Lilly apparently on behalf of the Adelaide Steamship Company for £315 with the gear and stores, etc. being sold to a variety of buyers notably J. and L. Bateman, Wood and Ericson, Hammonds and Hubble and Captain Siddell.⁴⁵

The hull was then used as a coal hulk in Careening Bay from 1 December 1888 and is reported in 1892 to have sunk in Careening Bay carrying 2300 tons of coal.⁴⁶ She was raised three months later and then disappears from the records.

The *West Australian* of 19 October 1910 refers to the *Redemptora* as a local wreck and she was obviously run ashore and abandoned some time between 1892 and 1910.⁴⁷ The *West Australian* newspaper of 13 September 1957 contains a reference however, to a Captain Jacobs (then 88 years old) who recalls salvaging in 1898 the cargo of a wrecked barque *Redemptoara* [sic] for the Adelaide Steamship Company in the area of Cape Leschenault.⁴⁸ The Adelaide Steamship Company, however, has no apparent records of the salvage of the vessel and there is no record of the unlikely possibility of the refloated hulk *Redemptora* being

re-registered for sea-going purposes after being initially condemned as unseaworthy. There is a possibility then that the wreck referred to by Captain Jacobs is not the vessel under consideration and is more likely the barque *Villalta*, wrecked on Leschenault Reef in 1897 with a cargo of timber.

Wreck 8: *Camilla*

The last of the known sites in the Jervoise Bay area is a small wooden copper fastened wreck in 2 m of water, 60 m from shore. It lies on an east/west axis about 1 km south of the Wreck of Stones, and just north of the Alcoa Jetty.

The wreck lies on its starboard side with most of the port side gone and measures 20.25 m x 4 m beam. The site has iron knees, and is lightly built.

A timber analysis undertaken by CSIRO shows that the vessel was most likely built in Europe and later re-planked or repaired in Australia or New Zealand.

The results of the analysis are:

Keel	<i>Ulmus</i> sp. — possibly European Elm
Keelson	<i>Ulmus</i> sp. — possibly European Elm
Treenail	<i>Quercus</i> sp. — Red Oak (Europe or America)
Plank	<i>Araucaria</i> sp. — possibly Australian or New Zealand Pine
Unknown	<i>Ulmus</i> sp. — possibly European Elm

Of all the sites in the area, the wreck most fits the description of the lighter *Camilla* which was owned by J. Ball who operated small wooden vessels in that capacity after 1897.

The records of the Fremantle Harbour Trust which commenced in January 1903 show the following:

J. Ball owner of condemned lighter *Camilla* was served with notice to remove the vessel from the Harbour without delay as she is an obstruction.

I have to report the *Camilla* has this day been removed in the harbour and beached beyond Woodman Point as directed.⁴⁹

A search of *Lloyds Register* showed two vessels of that name fitting the wreck in terms of size and ownership.

The likely *Camilla* was one built at Leith, England in 1834. Her details and history are as follows:

Official number	: 32403, QWBF
Construction	: Wood barquentine, 1 deck, 190 ton
Built	: 1894 at Leith, England by Beilbun and Co.
Dimensions	: 85.9 ft (26 m) x 23.6 ft (7.1 m) x 14.5 ft (4.21 m)

In 1853, she is recorded as leaving Leith for Adelaide and does not appear in *Lloyds Register* again. She is seen in *Lloyds Universal Register* (a different series) in 1885 and in 1891 is recorded as owned by the Bank of van Diemens Land, Hobart. She is recorded in 1892 as owned by the Orient Steam Navigation Co. and *Lloyds* records her 'now a hulk'.⁵⁰ The Register of British Ships at Hobart

shows the vessel was sold on 26 March 1891 to the Orient Steam Navigation Co. of Adelaide, a firm which also operated out of Albany, Western Australia and there is a possibility that the vessel found its way to this coast.

There are obvious problems, however, especially with the discrepancy in length,⁵¹ and more research is required. Being outside the area of development, however, and not at risk, work on site was postponed till a later date.

Site Identification

It can be seen then, that the *K VIII*, *Abemama*, *Alacrity*, *Egmont* and *Redemptora* are positively identified sites. The *?Ellen* and *?Gemma* sites are much less positive connections. The position of *Camilla* is reasonably sure though the question as to which *Camilla* is obviously not answered satisfactorily and needs more research.

Submission to the Environmental Protection Authority

Of the seven endangered sites, the *Abemama*, *?Gemma* and *Redemptora* were recommended in a submission to the Environmental Protection Authority in 1979 as worthy of retention in their present state. Only the *?Ellen*, *?Gemma* and possibly the *Redemptora* can be protected under the relevant Acts of Parliament however, and a logical give-and-take approach, without taking recourse to legal sanctions was seen to be of more value, especially as the Museum is keen to see all the wrecks preserved if possible.

The *Maritime Archaeology Act*, 1973 is operative in State waters, for example Jervoise Bay, and does not cover wrecks lost after 1900, such as the *Abemama* 1927. The *Commonwealth Historic Shipwrecks Act*, 1976 which allows for such vessels as *Abemama* being declared 'historic' cannot be invoked as Jervoise Bay lies in State and not Federal waters. The *Ellen* site (if it is so), though automatically protected by the *State Act* (i.e. pre-1900) would not normally warrant such protection under the *Commonwealth Act*, being almost totally destroyed by wave action and a direct comparison to the more worthwhile sites *Abemama*, *?Gemma* and *Redemptora*.

In September 1979 the Environmental Protection Authority produced its report and recommendations in which paragraph 4.9, with reference to historic wrecks, read:

The Western Australian Museum has recently carried out a survey of Historic Wrecks in Jervoise Bay and concluded that three of the seven wrecks located are significant and should be preserved. The four remaining wrecks contain some material of interest and this should be removed if development will affect them.

The authority is of the opinion, therefore, that the wrecks of the *Abemama*, (*Gemma*) and Wreck of Stones should be left undisturbed. If development work is proposed which would affect (the other) wrecks then the Museum should be given adequate notification and funding to enable salvage operations to be undertaken.⁵²

Here was the solution to the problem mentioned above.

The first stage of development has already occurred in the area of the *Egmont*, *Redemptora*, *Gemma* and *K VIII*, and the success of early informal personal contact can already be seen. The study shows there are no solid legal, historical or other grounds to prevent the destruction of the *Egmont* site for example, but the building contractors did their utmost to avoid causing any damage when constructing the 1979 jetty near the wreck. The informal contacts made with the contracting firm, site engineer, foreman and chief diver had positive results and similar approaches have been made in regard to the other wrecks in the area. All the government and private bodies involved in developing the area have been informed of the Museum's interest in the wrecks and of our desire to co-operate and assist in planning so that conflict can be avoided.

Recent indications are that development proposals with the bay are referred ultimately to the Department of Conservation and Environment who then contact the Museum for advice on whether the proposal affects any of the important historic wrecks in the bay. Should a site be actually required for further development, however, and there is failure to reach a compromise on avoiding the wreck, the following lines of action have been planned, on the basis of the surveys done:

K VIII (1943)

The site will be abandoned if necessary, to the developers. Documentation and recording is now complete and nothing further can be done apart from removing that section of the hull remaining and positioning it in a safe location.

Alacrity (1931)

Informal meetings will be arranged to have the development relocated to miss the site, but should these fail, the rudder, propellor shaft, propellers and a section of hull plating with frames will be removed. These items will then be stored adjacent to a protected site elsewhere until required for study and for a projected Maritime Museum display on ships' fittings. Storage will be designed so as not to unduly affect the electrolytic balance of the site(s) nearby.

Abemama (1927)

The total preservation of this site is sought. The wreck is seen to be of value as an educational tool and as a well preserved example of this last stage of wooden ship-building techniques. She has also proved of value in training of future maritime archaeologists, to schools and the average diver, being the only wooden wreck of easy and safe access on the coast. The Federal Government have also seen fit to support the protection of wrecksites based on their educational and recreational value, and have added this new criteria for assessment to those originally used.⁵³

?*Ellen* (1890)

This site is so badly broken up that little remains and it could be abandoned after the removal of all worthwhile fittings. An extensive magnetometer or metal

detector search will be necessary as some fittings, e.g. dead-eyes with attached chainplates were found 10 m off the starboard bow. Fittings ready for retrieval, display and study, are keel scarp joint sections, false keel section and iron knees. The site is, however, automatically protected under the provisions of the *Maritime Archaeology Act, 1973* by virtue of being in State waters and wrecked before 1900.

***Egmont* (1910)**

The site is so badly broken up as to be of little value historically or visually and may not warrant any more than salvage of those parts of value for study and/or display. The site could then be abandoned to the developers. The problems of inexpensive and quick measurement on a collapsed or heavily corroded iron site are obvious and the photographic and historical records prepared are considered all that is necessary at present. The rudder, steering gear and hawsepipes will be retained and stored for eventual display.

?*Gemma* (1893)

The total protection of this site is sought. Like the *Abemama* there is a substantial section of the vessel remaining including what may be a complete collection of the ironwork associated with the vessel's hull. The wreck lies close to existing slipways and jetties, but is in a safe and relatively deep position.

***Redemptora* (c. 1900)**

The total protection of this site is also sought. The wreck itself is almost totally covered with the ballast layer and as such should remain thus protected for many years. When required, it would then be available for study by future generations. Of all the worthwhile sites in the bay, this appears to have the most stable environment and potential for continued safe existence under its protective layer of ballast. It lies very near an existing slipway, however, and requires a close liaison with the future developers of the area to avoid any damage.

Conclusions

1 Many of the sites in the bay are abandoned 19th century hulks, and it is this almost forgotten class of shipwreck that has present, and more importantly, future value to maritime archaeologists and marine historians.

The hulk is often abandoned in out of the way calm, shallow water and these old vessels often exist today in relatively good condition. Some are intact only up to those areas encased in sand or other sediment. Others, such as the wooden *Vicar of Bray* in the Falkland Islands, the *Edwin Fox* in New Zealand and the iron *Santiago* in South Australia, are almost intact hulls.

Many former hulks have been refloated and restored, e.g. *James Craig*, *Polly Woodside* and *Great Britain* and a great deal has been learnt about the construction of these vessels in the process.

Most of the hulks throughout the world, however, would appear like those in Jervis Bay as much less imposing or even interesting structures to the present day; but that does not lessen their potential value for future generations.

There is already a wealth of information on ship-building techniques of the 19th century but even more can be learned from an examination of the physical remains themselves especially when the wreck is identified and its details known.

The ship's graveyard and the abandoned hulk can be a rich source of such information. Even if the wrecks there cannot, or need not be excavated and examined now, their future worth should be realized and steps taken to record their position and condition and preserve them for the future.

- 2 The study has, apart from its primary purpose and intrinsic value, a number of important ramifications. One such outcome has been to highlight the mutual support and benefit that the amateur and professional groups in maritime archaeology and history can gain from such a study.
- 3 Had the Museum taken a contentious approach and used the *Maritime Archaeology Act*, 1973 and/or the *Historic Shipwrecks Act*, 1976 when construction actually started, the results might not have been as encouraging. Informal contact at the early planning stage has helped avoid any potentially damaging clash of interest. The realization by both sides that compromise is necessary and pre-planning essential has led to a situation that will hopefully allow the proper study of those worthwhile sites and more importantly, their retention for the future.

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