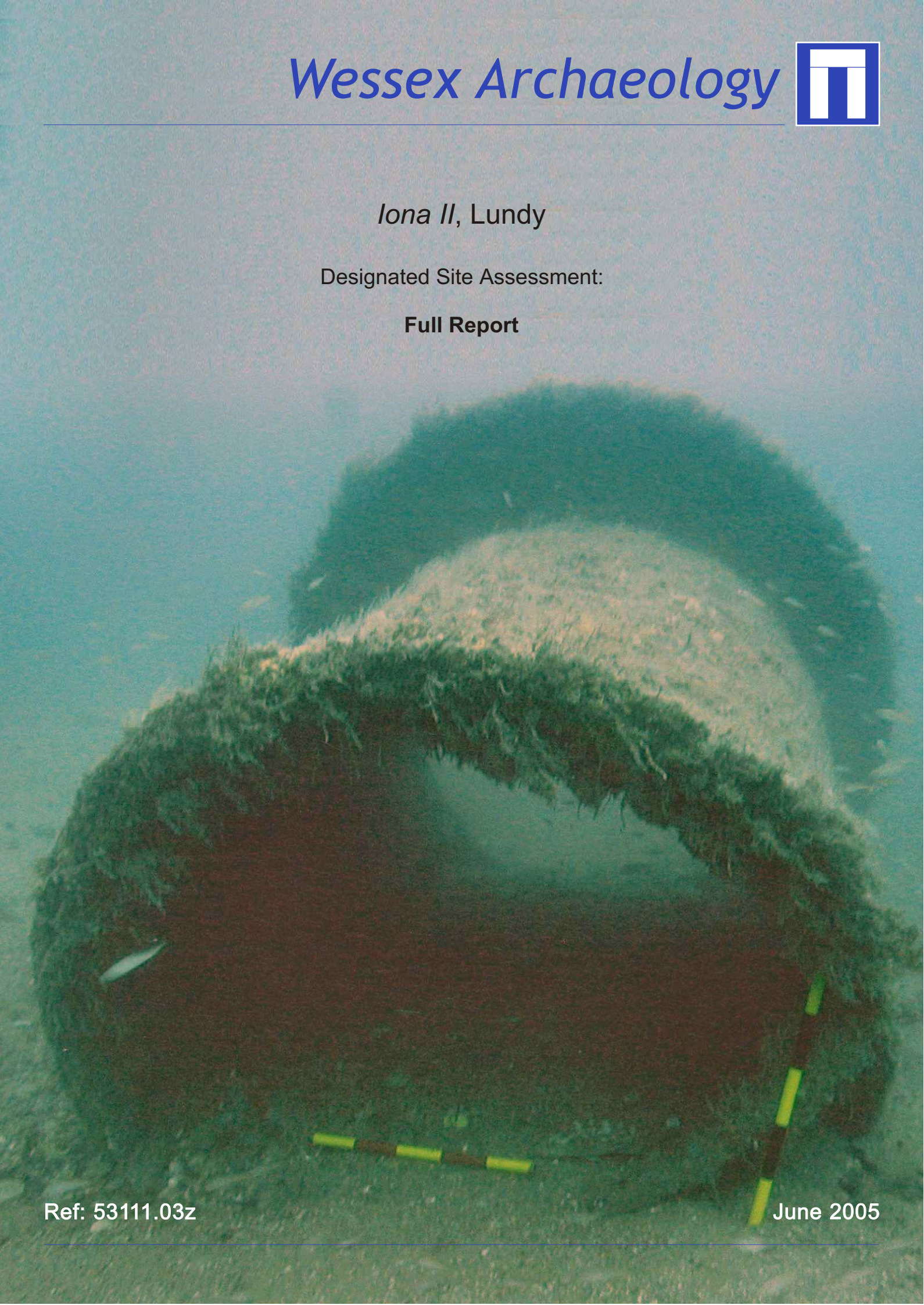
Wessex Archaeology

Iona II, Lundy

Designated Site Assessment:

Full Report



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June 2005

ARCHAEOLOGICAL SERVICES IN RELATION TO THE PROTECTION OF WRECKS ACT (1973)

IONA II, LUNDY

DESIGNATED SITE ASSESSMENT: FULL REPORT

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Summary

Wessex Archaeology was commissioned by English Heritage to undertake a Designated Site Assessment of the wreck of the *Iona II*: a designated wreck located close to the eastern shore of Lundy Island in the Bristol Channel. The work was undertaken as part of the Contract for Archaeological Services in Relation to the Protection of Wrecks Act (1973).

The *Iona II* is a paddle steamer built on the Clyde in Scotland in 1863 and was subsequently sold to an agent of the Confederate Government of the Southern States of America, which was at the time engaged in a civil war with the northern Federal States. The *Iona II* set sail in January 1864 and sank off the coast of Lundy on 2nd February 1864.

Diving operations took place between 5th and 12th August 2004. The aim was to establish a formal system of monitoring for the site by means of a series of Monitoring Points. Tasks included the preparation of a series of digital photographs of the site taken from recordable and repeatable observation points and directions, and photo mosaics of areas considered important within the site.

The results represent initial baseline monitoring data. They are presented with reference to some data sets acquired by the ADU and previous licensees. This previous data is limited and not consistent, but has been useful in gauging the deterioration of certain aspects of the site over the years since its discovery in 1976. Since the site was first visited by the ADU in 1989 and its designation in 1990 it has been noted that elements of the site have collapsed. There is evidence to suggest that illegal sports diving activity takes place on the wreck, in part due to the position of the wreck relative to the wreck of the *MV Robert* located approximately 30 metres to the east of the *Iona II*.

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Acknowledgements

This investigation was commissioned by English Heritage as part of the contract for Archaeological Services in Relation to the Protection of Wrecks Act (1973). The assistance provided by Ian Oxley and Jesse Ransley of the English Heritage Maritime Team is gratefully acknowledged.

Wessex Archaeology would also like to thank the following people:

- Ian Cundy and MADU;
- Philip Robertson;
- John Heath;
- Sheila Openshaw;
- The Lundy Warden;
- Jerry Williams.

The fieldwork was carried out by Graham Scott, Simon Adey-Davies, Jenny Black and Steve Gaynor. The report was compiled by Simon Adey-Davies with contributions from Graham Scott and Steve Webster. Karen Nichols and Kitty Brandon prepared the illustrations. The project was managed for Wessex Archaeology by Steve Webster.

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- Digital use of Chart 129

A copy of the report will be sent to UKHO.

IONA II, LUNDY

DESIGNATED SITE ASSESSMENT: FULL REPORT

Ref: 53111.03z

Contents

Figures

Plates

IONA II, LUNDY

DESIGNATED SITE ASSESSMENT: FULL REPORT

Ref: 53111.03z

1. INTRODUCTION

1.1.1. This document constitutes a Designated Site Assessment: Full Report for a programme of archaeological work undertaken as part of the contract for Archaeological Services in Relation to the Protection of Wrecks Act (1973). The document has been prepared by Wessex Archaeology (WA) for English Heritage (EH). It constitutes an assessment of the *Iona II*: a designated wreck site located off Lundy Island in the Bristol Channel (**Figure 1**).

1.1.2. The *Iona II* was a paddle steamer built in 1863 at Govan, with a length of 245ft and beam of 25ft, to ply the Clyde between Glasgow and Ardrishaig. Subsequently the vessel was bought by Charles Hopkins Boster of Virginia to be engaged as a Confederate blockade-runner, and it was whilst on route to Kingston in Jamaica that the *Iona II* foundered off Lundy in 1864.

1.1.3. The work was conducted in accordance with a brief provided by EH. Diving operations took place from 5th to 12th August 2004 from the survey vessel *Xplorer*. The fieldwork was carried out by Graham Scott, Simon Adey-Davies, Jenny Black and Steve Gaynor**.** Graham Scott and Simon Adey-Davies supervised the diving operations and Graham Scott supervised the fieldwork.

2. OBJECTIVES

2.1.1. The overall objective for the site as defined in the brief was for recording to Levels 1b, 2a and 3b.

2.1.2. This was further defined, specifying the following tasks:

- Establish areas of site that would be suitable for monitoring sediment level and structural collapse.

2.1.3. As a result of survey measurements taken during the initial dive, EH asked WA to establish the extent to which the site was protected by the existing designated area and to advise concerning the possible repositioning of that area. WA was instructed that this was the priority task.

3. EXISTING SITE DATA

3.1. SUMMARY OF ARCHAEOLOGICAL HISTORY

3.1.1. **1976:** Site discovered by dive tour operator John Shaw while looking for the *MV Robert*. Shaw subsequently carried out small-scale excavation at the site. Some finds deposited in the Greenock Museum.

3.1.2. **June 1989:** Site visited and surveyed by ADU who noted that the *MV Robert* lay 64 metres from wreck. The original co-ordinates in the UK Hydrographic Office record place the *MV Robert* 300 metres to the north-east of the *Iona II*. This is thought to reflect the reported point of loss of the *Robert*, rather than a surveyed position.

3.1.3. **3rd January 1990:** Site designated under the Protection of Wrecks Act (1973).

3.1.4. **June 1990:** Photographic and other survey work carried out under licence by Potters Bar Sub-Aqua Club.

3.1.5. **1991:** ADU note lifting strop on funnel base and signs of excavation.

3.1.6. **1991-1995:** Gradual deterioration of wreck noted during monitoring visits by ADU. Identified damage resulting from illegal diving, fishing activities and from anchors of dive boats trying to moor on the nearby wreck of the *MV Robert*. Remains of fishing nets found and photographed by ADU.

3.1.7. **1996:** Section of aft starboard boiler collapsing through what appears to be natural degradation according to Philip Robertson`s report to DCMS.

3.1.8. **1999:** Licensee John Heath took photographs to assist a general overview survey of the site.

3.1.9. **2000:** Ian Cundy of Malvern Archaeological Diving Unit granted a Survey Licence to dive and survey the site. Several anomalies and possible new areas of exploration revealed. Degradation of site considered to be minimal since 1990, although report to DCMS states that "less of wreck now visible and readily recognisable".

3.1.10. **2001:** Extensive survey on forward section undertaken by Ian Cundy and his team. Illegal diving observed on site by licensee. SMB reels and ropes from illegal diving found on site.

3.1.11. **2004:** Wessex Archaeology undertakes diver survey to facilitate the management and understanding of the site and to establish a monitoring regime for the site. The position of the *Iona II* relative to the *MV Robert* was also assessed (**Figure 2).**

3.2. SITE POSITION

3.2.1. The position of the site as given in the brief was as follows:

Lat.	**51° 11.03' N**
Long.	**04° 38.78' W**
OSGB 36	

3.2.2. The statutory instrument (SI) number is 1989/2294 and from the centre point (given above) the designated area consists of a circle with a radius of 50 metres. Ms Sheila Openshaw holds a visitor licence. There are no other licensees.

3.3. AVAILABLE DATA

3.3.1. Other information available prior to the assessment was as follows:

- 2001 Licensee report;
- 2000 Licensee report;
- 1995 Site datum distribution ;
- 1995 DSM survey;
- Isometric sketch (**Figure 3**);
- 95/20 ADU report;
- 93/05 ADU report;
- 92/17 ADU report;
- 91/23 ADU report;
- 1989 Statutory Instrument;
- Full survey archive of former licensee Mr Ian Cundy of Malvern Archaeological Diving Unit (with the exception of photographs and vessel plans). Mr Cundy also provided advice concerning diving conditions.

3.3.2. The ADU last visited the site in 2002 at which time they conducted a sidescan survey and a diver video inspection. Neither the 2002 ADU report nor their data was available to WA during the fieldwork. Part of the ADU database for the *Iona II* was made available to Wessex from NMR in November 2004. A limited amount of photographic material was seen but no underwater video. Sidescan sonar data that was taken by the ADU in 2002 was not available during the compilation of this report.

3.3.3. The site lies within a Marine Nature Reserve.

3.4. MATERIAL MISSING FROM THE ARCHIVES

3.4.1. The following material was referred to at various times by the documents and people that WA contacted during the post-excavation process. Its re-discovery would aid the process of assessing the possible decay of the vessel over the last 16 years.

- ADU underwater video;
- ADU photos from 1989;
- Potters Bar Sub-Aqua Club photos from 1990;
- ADU sidescan data from 2002;
- Photographs and video from John Heath.

4. METHODOLOGY

4.1. GENERAL

4.1.1. The following survey and monitoring techniques were used:

- Echo sounder survey to assist in locating the site and the wreck of the *MV Robert*, a merchant vessel that sank in 1975 that lies very close by;
- Tracked diver survey using a Sonardyne Prospector LBL acoustic diver/ROV tracking system to position and geo-reference selected site features for both *Iona II* and the *MV Robert*; and to measure the distance between the two wrecks;

- A tape survey was used to confirm the distance between the *Iona II* and the *MV Robert*;
- Positioning of monitoring datums on selected site features;
- Photographic condition survey of the monitoring datums from recorded and repeatable positions;
- Photographic and visual survey was made of the boilers to ascertain their current state;
- Results were recorded using the WA Diver Recording System linked to the Prospector diver tracking system.

4.1.2. Details of the methodologies used during the 2003 PWA survey are detailed in a separate document (WA 2004a).

4.2. ILLUSTRATIONS

4.2.1. Prior to the WA site visit the main base plan of the site was an isometric sketch plan drawn by Carol Rule and based on dive descriptions (**Figure 3**). Although a very useful aid to diving on the site, this image had not been updated since 1996 and was known to be incorrect in some areas.

4.2.2. In order to aid with the future monitoring of the site WA developed three images. They are as follows:

- Isometric sketch plan – the positions of the two sets of boilers were reversed (the forward and stern boilers, which were different lengths, had been mis-positioned in the original). Also the collapse of the portside paddle wheel and a number of recent exposures were illustrated in the new version of this plan (**Figure 5**);
- The overall disposition of the *Iona II* and the *MV Robert* was generated from the tracked diver survey, with additional data concerning the *Iona II* outline derived from the architect's plans (**Figures 2 & 4**);
- An image showing the projected extent of the buried section of the hull was generated using diver observations and the architect's side elevation of the vessel (**Figure 4**).

5. RESULTS

5.1.1. The diver tracking system found the *Iona II* a relatively difficult site to range on; often the system would only range on two beacons at any one time. The fact that the site consists mostly of iron may have resulted in the creation of acoustic 'shadows' within the wreck area. As a consequence, the accuracy of the positional data has varied, with up to four metres difference in positions upon the same point. This is markedly apparent when ranging was attempted when the diver was amongst the wreckage of the site, such as the boilers and crankshaft assembly. Accuracy was better when the diver was in more open areas such as the bow and stern sections.

5.1.2. Where two or more positions were taken of the same artefact an average was taken of the co-ordinates.

5.2. POSITIONAL DATA

Iona II

5.2.1. The following position is for the centre of the SI, as given in the brief.

Lat.	**51° 11.03' N**
Long.	**04° 38.78' W**
OSGB 36	

5.2.2. The following position was obtained by tracked diver survey for the most southerly exposed archaeological feature located during the WA 2004 operations. It appears to be an iron frame and lies very close to the likely position of the stem.

Lat.	**51º 11.063' N**
Long.	**04º 38.858' W**
WGS 84	

5.2.3. The following position was obtained by tracked diver survey for the most northerly exposed archaeological feature located during the WA 2004 operations. It is probably the remains of the sternpost.

Lat.	**51º 11.099' N**
Long.	**04º 38.834' W**
WGS 84	

5.2.4. The orientation of the site, along what is believed to be the line of the keel, is approximately NNE (stern) – SSW (bow). Previously the orientation was reported to be NNW-SSE. It is believed that the ADU sidescan image showed the same NNE – SSW orientation in 2002.

5.2.5. This positional data shows that the whole of the *Iona II* does not lie within the designated area. This is illustrated in **Figure 2**.

MV Robert

5.2.6. The wreck of the *MV Robert*, a vessel that sank in 1975, lies approximately thirty metres to the east of the rudder of the *Iona II* (**Figure 2).** The *MV Robert* lies on its starboard side with its keel orientated approximately NE - SW.

5.2.7. The following position is for the aft end of the keel where it met the rudder of the *MV Robert*:

Lat	**51˚ 11.093' N**
Long	**04˚ 38.812' W**
WGS 84	

5.2.8. These positions were obtained by tracked diver survey. The orientation of the *MV Robert* could be ascertained by the diver`s visual description and compass headings and the diver tracking system. Due to varying accounts of the orientation of the two wrecks and the distance between them, a taped measurement was also taken between the stern of the *Iona II* and the rudder of the *MV Robert*. This confirmed the diver tracking results

5.3. DIVING CONDITIONS

5.3.1. The site is sheltered from westerly winds but exposed to easterly, northerly and southerly wind direction. The prevailing winds are westerly. Information received prior to fieldwork suggested that variable visibility was likely to be experienced due to the inclement weather that had been common in the weeks leading up to fieldwork.

5.3.2. Strong currents were experienced at times, and there was some restriction of bottom time as a result. The current may also have affected the tracking system. The diver tracking beacons on the seabed were attached to approximately two metres of rope so that they floated above the seabed so as to allow line of site of the beacons. In a strong current these beacons may oscillate and effect the quality of the data as they move away from the positions to which they were calibrated.

5.3.3. The site lies at a maximum depth of approximately 26 metres, reducing the bottom time to 30 minutes, although at low water slack the bottom time was extended to 40 minutes. This considerably limited the amount of work that could be carried out on the site.

5.3.4. Visibility on this site can vary; 10 metres visibility has been noted on some occasions but during the visit by WA visibility was no better than 4-5 metres. If the diver disturbed the silt on the seabed visibility was curtailed until the current took away the suspended sediment. On occasion when photography took place a slight current was advantageous as it carried away the suspended sediment.

5.3.5. Two days were lost to bad weather and a total of 254 minutes of dive time were achieved. A table providing dive details can be found in **Appendix I**.

5.4. GEOLOGY, TOPOGRAPHY AND FLORA

5.4.1. The seabed is coarse, firm, level mud and fine silt, studded with embedded pebbles and cobbles. There are areas within the wreck consisting of loose fine sand, and there are some gravel patches around the boilers.

5.4.2. A marine biological survey was carried out and reported in 1995 for the MCS MNR working party. This indicated that areas of the wreck, particularly the boilers, are colonised with plumose anemones (*Metridium senile*). Thick clumps of these anemones were found on some, though not all of the ribs in 2004.

5.4.3. The anemone *Actinothoe sphyrodeta* was found in patches on the ribs and the Devonshire cup-coral *Caryophyllia smithii* was present on vertical and horizontal surfaces. The hydroid *Tubularia indivisa* was the most widespread species. This species could be seen quite clearly on some surfaces of the engine remains.

5.4.4. In 2004 there appeared to be less marine flora and fauna on the site than that recorded by the 1995 survey (**Plates 1-10**)

5.5. WRECK FEATURES

Overall

5.5.1. The wreck consists primarily of three distinct areas on the seabed. Within the bow and stern areas the remains for the most part lie flush with the seabed. This contrasts with the central section of the wreck where the boilers and crankshaft assembly are still standing (**Figure 5**). From what is known of the dimensions and layout of the ship when built, and visible remains on the seabed, it appears that the bow lies to the SW and the stern to the NE (**Figure 2**).

5.5.2. The wreck sits on the seabed in an upright position, and it appears that a substantial part of the hull may survive buried. A desk-based assessment of the degree of potential survival has been conducted using the architect's plans and the 2004 WA observations. This has not yet been backed up by detailed measurements of the surviving dimensions of the hull and comparing it to the original plans, but a suggested model for the survival of the Hull is presented in **Figure 4**.

5.5.3. When Ian Cundy and the Malvern Archaeological Diving Unit (MADU) dived the site in 2000 and 2001, it was buried up to approximately the centre line of the boilers, with the crankshaft at approximately chest height (1-1.5 metres} above the sea bed. Although the boilers are not shown on the architect's plans the crankshaft must sit between the paddle wheels approximately 10-11 feet above the keel (i.e. at around the main deck level) (**Figure 4**). This suggests that 5-7 feet of the hull are still buried. The plans record the length of the vessel as 245 feet (74.68 metres). The overall length of exposed wreckage is 74.43 metres (244 feet) (**Figure 4**).

5.5.4. As only the lower section of the ship survives it can be concluded that a significant percentage of the vessel has collapsed. This includes the superstructure, masts and funnels. Some of this may have been salvaged shortly after the sinking but no records have been discovered indicating what if anything was retrieved.

5.5.5. A small section of hull plating is visible on the port side alongside the port side forward boiler (**Plate 4**). The boilers are level suggesting that the vessel sank on an even keel (**Plate 3**). From their position relative to the height of the crankshaft it would appear that the top of the boilers must have been approximately level with the main deck of the vessel (**Figure 4**).

5.5.6. There is no discernible feature that may be identified as the stem of the vessel. The lines of the hull that are proud of the seabed can be seen tapering towards the bow. However, before they meet they disappear into the seabed – suggesting that the stem is either wholly buried, or has fallen off the surviving structure (**Plates 1** and **2**).

Bow Area

5.5.7. The bow area has few discernible features other than the outline of the hull that can be seen on the seabed. This outline stands no more than 0.1 metres proud of the sand. The hull has disintegrated entirely where it is proud of the seabed, apart from one small section. Stanchion supports can be seen running along the centre line towards the boilers and infrequent frames can be seen on both the starboard and port sides (**Plates 1** and **2**).

Central Section

5.5.8. The amidships area is dominated by the boilers and the paddle wheel crankshaft assembly (**Figure 5** and **Plates 6** and **7**). There are four boilers on the wreck; two lie immediately forward of the crankshaft (**Plate 3**), and two sit aft, separated from the crankshaft by an area of the wreck that is in-filled with sand. All are tubular boilers that sit longitudinally and side by side. The aft boilers are shorter than the forward pair, possibly to balance the vessel as they lie further from the centre of the ship (**Figure 5**).

5.5.9. The boilers have a layer of concretion on them, but some of the fixtures that were part of their original construction are still visible. The lower third of the boilers are buried under silt (**Plate 3**) and the interiors of the boilers are filled with silt to various degrees. The starboard stern boiler shows signs of deterioration, as noted in the 1996 report to DCMS. The plating of this boiler has corroded leaving small holes in the boiler in areas. It is possible to look into the interior of the boiler through these apertures and the fireboxes are just about discernible through the silt.

5.5.10. The boilers themselves are constructed by means of shaped iron plates riveted together. Both sets of boilers have an area that would have once held the smokestacks. These smokestacks are no longer in place (**Figure 5**) and so it is now possible to see into the boilers through the apertures, although silt has largely obscured the features within them. The bolt-holes for attaching the funnel bases can still be seen, although the funnels are now largely missing.

5.5.11. The remains of sections of both the fore and aft funnels now lie on the seabed between the crankshaft and the forward boilers (**Plate 5**), and three metres off the port side of the aft boilers (**Plate 9** and front cover). From contemporary drawings of the *Iona II* it appears that the original funnels were much taller than the remains on the seabed. It would appear that the remains on the seabed are the sections of the funnel that were bolted on to the top deck of the vessel, the flanges for this attachment still survive (**Plate 9** and front cover). It seems likely that the upper sections of the funnels have either disintegrated over time, or became detached during the sinking and now lie elsewhere.

5.5.12. The remains of a bulkhead forward of the forward boilers, which was noted in the 1990 survey (Rule 1991), have now largely collapsed (**Plate 3**). The only significant section of the hull that remains is an area running alongside the port side forward boiler that stands proud approximately two metres above the seabed and runs for approximately four metres (**Plates 4** and **10**).

5.5.13. The crankshaft assembly (**Plate 7**) is all that remains of the gearing mechanism that once transferred power to the paddle wheels. During the first archaeological surveys of the site the largely intact remains of one paddle wheel were visible on the port side with little remaining on the starboard side (**Figure 3**). Observations during the WA 2004 visit indicated that the port side wheel had collapsed (**Plate 6**) and that elements had fallen off the hub of the starboard side wheel.

5.5.14. The crankshaft assembly sits proud of the seabed by approximately 1.5 metres, and is heavily concreted. Evidence from unattributable photographs amongst the ADU records, probably taken in the early 1990s, show there to be far less concretion on the crankshaft in the past.

5.5.15. Griffiths (1997 p.21-22) states that the *Iona II* had an oscillating engine, i.e. an engine whose cylinder oscillates on trunnions instead of being permanently fixed in a perpendicular, or other direction. allowed for the construction of a more compact engine and the system was found to be reliable. By the 1870s the technology had been superseded and very few examples of oscillating engines survive. A contemporary drawing of the engine assembly (Griffiths 1997 p.22) shows that the piston assembly was situated below the crankshaft. Sections of this structure are visible forward of the crankshaft (**Figure 5**), more remains should lie buried in this area.

Stern

5.5.16. The aft area is similar to the bow area in that little is visible above the level of the seabed. An outline of the hull can be seen on the seabed (**Figure 5**), tapering to meet together at what is probably the stern. At the stern there are what appears to be the remains of the stern post (**Plate 8**), but no sign of the rudder itself.

5.5.17. Other visible remains include the centre support stanchions running along the centre line towards the rear boilers, and the remains of frames along both the port and starboard side (**Figure 5**). The remains of what may be ballast can be seen to the north of the stern boilers.

Debris Field

5.5.18. Previous licensees have commented that debris lies outside the immediate confines of the wreck, but that no survey of these features had been carried out. WA came across only one small section of debris outside of the main body of the wreck, which is possibly part of the remains of a paddle wheel. A small section of the circumference of the paddle wheel and the remains of one radial spoke were all that remained.

5.6. MONITORING

Approach

5.6.1. Twenty-two monitoring points were established around the wreck. These points have been used to assess the extent of the deterioration by comparing the 2004 photos with photos taken in previous years. It is intended that this process should be continued during subsequent visits in order to properly monitor changes to the structure and environment over time.

Monitoring Points

5.6.2. The monitoring points were chosen with a number of factors in mind. The points had to be easily identifiable and relatively easy to find in the future; repeatability has been a factor in their choice of position. The monitoring points also had to be important in an archaeological sense and were positioned so as to be able to help monitor changes to the site over the coming years. Photographs were taken of the monitoring points themselves and of their general area.

5.6.3. Some of the monitoring points were marked by the use of yellow survey tags, with their ID designation mark, e.g. MP01, melted into the plastic. Other monitoring points were of general areas, such as the area between the *MV Robert* and the *Iona II* (MP21).

5.6.4. Where a yellow tag could not be placed (e.g. MP17, the fallen funnel three metres off the main body of the wreck), a photograph and fix of the position was taken.

Previous Data

5.6.5. In October 2004 WA was given access to the ADU archive by the NMR. Few comparisons can be made with photos of previous years because it is not known exactly where they were taken within the wreck. Had these photographs been available to WA prior to visiting the site an effort would have been made to identify the point of capture.

5.6.6. The past information that was available was as follows:

- ADU photographs believed to date from 1992 (however some images may be later in date);
- Notes annotated to a copy of the isometric sketch plan of the site (**Figure 3**) by a team led by Ian Cundy who visited the site in 1996;
- An undated selection of photographs.

5.6.7. The comparisons between the various data sets are presented in **Appendix IV**.

Wreck Conditions

5.6.8. The most obvious change since the site was discovered was that the port side paddle wheel, which according to ADU records was largely intact in 1989, had collapsed. It is understood that this happened during the winter of 1990/91 and by 1996 had disintegrated. Due to the distribution of material from this paddle wheel it may be conjectured that an outside influence, such as a visiting boat anchoring into the *Iona II,* caused the damage. Natural deterioration is less likely to have caused such a traumatic disintegration.

5.6.9. Originally the paddle wheels themselves would have been 20ft in diameter and were fitted with 'feathering floats' which were variable pitch paddle blades. These allowed the angle of the blades to be adjusted, or even removed where appropriate. (Griffiths 1997 p.21). No evidential remains of any aspect of these features have been noted in any of the written reports.

5.6.10. Where it has not been protected by burial, the hull of the wreck appears to have disintegrated. On the wreck of the *Iona*, the previous ship to bear the name, there are a significant number of remaining hull plates left upon the seabed, however this is not the case with the *Iona II*. It is not clear at this stage whether this is the result of different constructional materials or different post-wrecking processes.

5.6.11. There is no visible intact evidence for the superstructure of the vessel. When the ship was being refitted for its journey to America it is reported that a significant proportion of the superstructure was removed although some, such as the bridge, would certainly have remained. It is possible that this section of the wreck was damaged during the salvage of the cargo of arms that she was carrying.

5.6.12. Ian Cundy stated in his report to the DCMS that the remains of part of the superstructure lies approximately 20 metres to the north-east of the most northerly point of the wreck. This wreckage could not be seen on the sidescan data taken by the ADU and WA was unable to verify its existence by diver survey.

5.6.13. Another feature of the original vessel that is not represented in the known seabed remains is her masts. It was reported that when she was re-fitted to serve as a blockade runner the *Iona II* was fitted with a schooner rig. Even though the mast(s) and spars are likely to have been wooden, some evidence in the form of chain-plates should survive.

5.6.14. In 1996 it was noted that the boilers may be collapsing. Although holes, in keeping with the 1996 reports, were noted in 2004, the structures did not seem to be in imminent danger of collapse. The in-filling of sand has certainly aided their survival.

5.6.15. There are three areas, the bows, stern and amidships between the crankshaft and the stern boilers, where some evidence for transverse deck-supports may be expected. The absence of any clear evidence for this is likely to be due to the salvage of the cargo in the 19th century and 'excavations' carried out by SCUBA divers prior to designation.

5.6.16. As a result of the MADU survey the following dimensions were gained of the wreck:

- Length of forward boilers: 9.2 metres;
- Length of stern boilers: 5.4 metres;
- Width of wreck forward of forward boilers: 7.37 metres;
- Width of boilers: 2.44 metres;
- Distance from southern end of southern boilers to northern end of northern boilers: 23.89 metres;
- Length of funnel base adjacent to crankshaft: 1.98 metres;
- Length of wreck overall from stem to stern: 74.43 metres;
- Distance from crankshaft to beginning of northern boilers: 4.42 metres;
- Distance from crankshaft to beginning of southern boilers: 4.27 metres.

6. CONCLUSIONS

6.1.1. Monitoring datums were established on a number of site features and a photographic condition survey was carried. Although the WA field team do not currently have access to video tapes from previous ADU inspections, it is clear from the documentation passed to WA by the NMR and by former licensee Ian Cundy that the condition of the site has deteriorated since it was first surveyed. For example the port side paddle wheel is no longer attached and appears to have effectively disintegrated and the bulkhead forward of the forward boilers, that can be seen in Carol Rule's isometric drawing (Rule, 1991), is no longer in place.

6.1.2. Although the boilers and crankshaft assembly do not appear to be in any immediate danger of collapse, they do show evidence of corrosion and some structural weakening and very long term survival is unlikely.

6.1.3. The boilers themselves are largely intact. However, there are areas where corrosion and damage have penetrated the boiler walls. The area where the funnels once attached to the boilers are open, and it is possible to look inside and view the interior of the boilers. Also there are numerous small holes in the plating of the boilers, but they do not appear to be in an imminent state of collapse. The riveted joints to the boiler plates appear intact and no separation was observed.

6.1.4. There was no evidence of any specific threat to the site, other than general collapse due to corrosion of the metal components.

6.1.5. As a result of the 2004 fieldwork the main site features of the *Iona II* have been accurately geo-referenced and positioned relative to the *MV Robert*. A correct orientation has also been established for the site. Significant areas of the site require further detailed survey, particularly as its condition has changed since survey work started.

6.1.6. The site of the *Iona II* and the wreck of the *MV Robert* were positioned and orientated to a very high degree of confidence using acoustic positioning, supported by compass and hand tape measurements as required. It was established that the *Iona II* is orientated NNE (stern) - SSW (bow) and not as previously thought NNW-SSE. It was also established that the *MV Robert* currently lies 30 metres to the east of the stern of the *Iona II* and not 60 metres or more as previously reported.

6.1.7. It is thought extremely unlikely that the *Iona II* has changed its position or orientation since the last survey for which data is available, and no physical evidence of movement was observed (the WA field team have not thus far had access to ADU sidescan survey data, believed to have been collected in 2002). Insufficient data is available to assess whether the largely intact *MV Robert* has moved, although this is also currently considered very unlikely.

6.1.8. There has been a degree of confusion over the years as to the precise location of the *MV Robert* in relation to the *Iona II*. In 1989 the ADU stated that the collapsed smoke stack of the *Iona II*, which lies outside the wreck, was 54 metres from the rudder of the *MV Robert*. The WA survey indicates that this is correct. However, over the years the figure of approximately 60 metres has been given for the distance between the two wrecks.

6.1.9. The figure of 60 metres appears to have been transferred from group to group and taken as fact. John Heath, a licensee in the mid-1990s, gave the figure of 60 metres between the two wrecks. In fact this seems to be a distance between the rudder of the *MV Robert* and the front of the forward boilers of the *Iona II*.

6.1.10. Divers from MADU stated that they would "descend a shot line on the *MV Robert* and travel west from the rudder for 64 metres on their tape and then swing south and come to the stern of the *Iona II*". On the way they would encounter an element of the superstructure of the *Iona II* on its own. WA has no reason to disbelieve the MADU divers, but it is not inconceivable that by following that route their tape routinely became entangled in debris, thus giving a false reading.

6.1.11. There has been speculation as to what caused the *Iona II* to sink. Although the vessel had just come from Ireland in heavy weather, the route that the ship used to ply in the west of Scotland should have meant that it was able to withstand relatively heavy seas. Therefore it would be surprising if the weather alone was the cause of the sinking. Also the agents that bought the ship must have had confidence in the fact that the vessel, which was only one year old, would be able to cross the Atlantic. However, something may have been wrong with the vessel after her re-fit because when she reached Ireland (en-route from Scotland to America) 13 of the crew mutinied and refused to carry on. The reason given is not entirely known, but a

newspaper article from the local Ilfracombe paper printed a week after the sinking stated that the crew thought that the ship was un-seaworthy.

6.1.12. Contemporary accounts state that the changes made to the vessel included the strengthening of her holds, the removal of the superstructure and the adding of a mainmast. The strengthening of the hull may have been to allow the maximum amount of coal to be carried on board for the Atlantic crossing, although this would still not have been enough for steam propulsion alone. Sail assistance would have been necessary to supplement the steam power. Accounts also state that the ship was heavily laden when it left Glasgow, and it is assumed that this was largely additional coal.

6.1.13. It has been speculated that this extra coal would have substantially lowered the ship in the water and thus contributed to the ship taking on water and sinking. Also, the addition of a mainmast may have presented difficulties to the handling of the vessel, which was not designed as a sailing ship, but this cannot be quantified without knowledge of the position of the mast and the configuration of the sails. One of the key factors in all this is the reportedly open engine room.

6.1.14. This was said to be "uninclosed (sic) on three sides save by rails (Duckworth and Langmuir 1987). If this was not addressed during her re-fit then it is possible that heavily laden with coal, top heavy from the addition of a main mast and in the heavy seas she may have begun to take on water amidships. This is supported by the report that incoming water doused the boilers causing her pumps to stop.

6.1.15. In order to answer these questions it would be necessary to examine sections of the outer hull (to see if the parting of the plates may have been responsible for the vessel taking on water), assess the volume of coal in the holds and determine the size of the main mast. Further documentary work may also be able to answer questions concerning her refit.

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APPENDIX I: DIVE DETAILS

Dive no.	Date	Diver	Max Depth. (m)	Bottom Time (mins)	Current	Estimated Visibility (m)
2004/232	5/8/04	S. Gaynor	21.25	32	Slight	5
2004/234	6/8/04	G. Scott	22.5	38	Slight	1-3, cloudy
2004/235	6/8/04	J. Black	22	29	Slack	1-3
2004/236	9/8/04	G. Scott	26.75	26	Slight	3
2004/237	9/8/04	S. Gaynor	26.5	24.45	Marginal	3
2004/238	10/8/04	S. Adey-Davies	25.75	24	Strong	4-5
2004/239	10/8/04	S. Gaynor	26	30	Strong	8
2004/240	12/8/04	G. Scott	26.2	27	Marginal/ strong	5+
2004/241	12/8/04	S. Gaynor	26.75	24	Slight	8

APPENDIX II: ARCHAEOLOGICAL OBSERVATION LOG

Obs. ID	Dive No.	Obs. Type	Co-ordinates WGS 84 UTM		Video Time	Description
2099	232	Boiler	384866	5671664	00:04:02	Rov-Trak worked well. On top of boiler, 19m.
2100	232	Funnel	384869	5671667	00:06:06	Diver at funnel, observes ballast to NW.
2101	232	Stanchion	384867	5671673	00:06:45	Diver observes stanchion.
2102	232	Port side	384875	5671672	00:07:59	Diver at port side of vessel.
2103	232	Debris	384877	5671679	00:08:30	Diver observes debris in a rough line, mostly buried.
2104	232	Posible sternpost	384878	5671687	00:09:45	Possible sternpost, no wreck material visible to NW.
2105	232	Seabed	384877	5671688	00:10:30	Loose seabed some shingle and gravel, poorly sorted noted.
2106	232	Wheel	384874	5671673	00:11:59	Diver observes a slightly buried wheel? 1.60-1.70m wide approx, perhaps base of a funnel? Uncertain.
2107	232	Boiler	384877	5671667	00:13:17	Diver back on boiler (no - see next obs).
2108	232	Funnel base	384876	5671663	00:13:50	Correction, diver has observed funnel base, not a boiler.
2109	232	Boiler	384876	5671667	00:15:17	Diver on boiler.
2110	232	Bulkhead	384869	5671667	00:15:40	Diver on bulkhead, on which the boiler lies.
2111	232	Boiler	384867	5671664	00:16:10	Diver at SE end of the boiler.
2112	232	Crank assembly	384867	5671664	00:17:19	Diver at crank assembly, starboard side.
2113	232	Crank assembly	384866	5671665	00:17:35	Diver at crank assembly, port side. Paddle wheel no longer visible, some metal debris visible.
2114	232	Funnel	384863	5671666	00:18:20	Diver on a funnel.
2115	232	Starboard side	384858	5671659	00:20:20	Diver at starboard side of vessel.
2116	232	Concretion, metal	384856	5671660	00:20:50	Diver observes a square concreted iron object on the seabed.
2117	232	Crankshaft	384862	5671657	00:21:40	Diver at top of the crankshaft.
2118	232	Boiler	384862	5671654	00:22:15	Diver at end of a boiler.
2119	232	Boiler	384860	5671646	00:23:20	Diver at opposite end of the boiler, appears to be longer than boilers to the north. Boiler seem to be in fair condition no holes visible.
2120	232	Stem	384848	5671623	00:26:20	Diver at the stem? Some metal plating visible.
2121	232	Bow area	384848	5671622	00:26:40	Diver notes starboard and port are buried just short of meeting one another, stem buried.
2122	232	Iron plating	384850	5671627		Diver observes iron plating 2/3m square
2123	232	Iron plating	384850	5671627	00:28:15	Diver in middle of plating, area about 2/3m square.
2124	232	Boiler	384857	5671644	00:30:25	Diver at end of boiler. Starts a run to video one boiler in its entirety.
2125	234	Boiler	384868	5671661		Port outside boiler.

2126	234	Photos	384868	5671668	00:06:47	
2127	234	Photos	384868	5671668	00:09:30	
2128	234	Metal plate	384869	5671664	00:13:23	Diver sees metal plate, port side.
2129	234	Photos	384870	5671663	00:13:40	
2130	234	Firebox	384867	5671660	00:17:30	Diver observes firebox.
2131	234	Photos	384866	5671660	00:17:33	
2132	234	Photos	384866	5671660	00:20:00	
2133	234	Photos	384865	5671662		
2134	234	Boilers	384868	5671665	00:25:00	Diver between two boilers.
2135	234	Photos	384869	5671668	00:30:30	
2136	234	Photos	384868	5671667	00:31:30	
2137	234	Photos	384869	5671667	00:33:20	
2138	234	Photos	384865	5671666	00:34:40	
2139	234	Left bottom	384871	5671664	00:38:06	Diver leaves bottom.
2140	235	Object, iron	384869	5671667	00:10:00	Northen end of boilers.
2141	235	Object, iron WA1	384861	5671671	00:15:00	WA1 datum on iron frame (?). Most northerly visible feature.
2142	235	Object, iron WA2	384865	5671672	00:21:00	WA2 iron support along central axis of vessel?
2143	235	Object, iron WA3	384868	5671678	00:24:00	WA3 iron frame, port side astern of boilers.
2144	235	Left bottom	384874	5671671	00:28:55	On shot.
2145	236	Made bottom	384869	5671633		Depth 26m.
2146	236	Beacon D	384834	5671621		
2147	236	Boiler middle	384860	5671643		
2148	236	Boiler	384863	5671648		Moving along the top of the portside boiler.
2149	236	Boilers	384866	5671654		Other end of boiler's northern end centre position.
2150	236	Crank shaft	384862	5671654		Crank shaft.
2151	236	Crank shaft	384862	5671656	00:09:30	Centre of the crank shaft.
2152	236	Northern boilers southern point	384865	5671658		Southern centre point on the northern set of boilers.
2153	236	Boilers	384869	5671666		Centre point, northern set of boilers, northern point.
2154	236	Stern area	384872	5671680	00:13:39	Possible stern area.
2155	236	Port side	384874	5671669		Diver on port side of the vessel.
2156	236	Debris	384877	5671671	00:15:55	Area of debris outside the vessel possibly plating.
2157	236	Stern post	384878	5671686		
2158	236	Repeat on stern post	384878	5671687		
2159	236	Vessel orientation	384878	5671687		NNE-SSW axis. How vessel lies.
2160	236	Centre supports	384857	5671643		Diver moving down centre supports. Good line of frames.

2161	236	Bow	384849	5671620		Diver on bow. NNE, looking back towards the wreck.
2162	237	Made bottom	384870	5671655		Depth 20m. On wreck.
2163	237	Near Beacon B	384883	5671686	00:08:12	Diver attaches weight near bottom of Beacon B, then travels east 20m which should lead to the *Robert*. Depth at Beacon B: 26.5m.
2164	237	10m on baseline	384892	5671683		Depth at 10m on the tape 26m.
2165	237	The *Robert* wreck	384903	5671677	00:10:51	24m on the baseline tape from Beacon B. Diver moves off to the south, tracing the outline of the wreck. Diver attaches tape to the wreck.
2166	237	Rudder	384904	5671673	00:11:15	
2167	237	Rudder repeat	384903	5671672	00:11:33	
2168	237	Diver follows keel	384909	5671688	00:13:56	Diver follows keel but does not reach the bow. Northernmost point that diver reaches on wreck.
2169	237	Position of weight	384884	5671686	00:16:40	Position of weight near Beacon B. Current slight from the north-east.
2170	237	Port boiler	384869	5671664		Diver on port boiler.
2171	237	Left bottom	384871	5671674		
2172	238	Made bottom	384872	5671639		Depth 25.5m.
2173	238	Possible section of wheel fragment	384872	5671641	00:03:15	Video shots taken.
2174	238	WA04 Frame on port side nearest bow	384848	5671625	00:08:05	First visible frame from the bow on the port side, Tagged WA04.
2175	238	WA05	384853	5671633	00:10:40	First support frame visible from the bow running along the keel, tagged WA05.
2176	238	WA06 port forward boiler	384855	5671643	00:13:10	Port forward boiler tagged WA06 attached to boiler itself.
2177	238	WA07 hull plating on portside	384863	5671645	00:15:00	Attached to hull plating on the portside near the forward port boiler.
2178	238	WA08	384863	5671652	00:17:14	Base of funnel lying on portside of the wreck. Lying near port forward boiler and portside crank shaft. Depth 25m.
2179	238	WA09	384857	5671658	00:18:51	WA09 attached to possible remains of a paddle wheel area, tag attached to one of the features in the area.
2180	238	WA10	384855	5671662	00:21:29	Portside crank shaft tag attached on possible piston.
2181	238	Left bottom	384860	5671624		
2182	239	Made bottom	384855	5671644		Depth 26m.
2183	239	WA11	384855	5671657	00:04:58	Tag attached to bottom of starboard paddle wheel.
2184	239	Repeat WA11	384854	5671664		ROV Trak not ranging well.
2185	239	WA12	384861	5671662	00:08:00	Portside boilers centre point at the end nearest the bow.
2186	239	WA13	384870	5671668	00:09:44	Ballast mound area midships tag attached to collapsed support.
2187	239	Repeat WA13	384872	5671672	00:10:33	

2188	239	WA14	384882	5671686	00:13:18	Stern post tagged (on furthest post at end of the wreck).
2189	239	WA15	384881	5671676	00:16:45	First frame on port side nearest the stern.
2190	239	WA16	384886	5671671	00:19:00	On framing on the port side, ROV Trak position possibly bad as had jumped and settled badly.
2191	239	Position on centre of the funnel ring	384872	5671668	00:20:00	
2192	239	WA17	384874	5671665	00:22:06	Portside funnel tag placed on a weight inside funnel which is on its side.
2193	239	Left bottom	384855	5671629		
2194	240	Made bottom	384869	5671627		Depth 26m, visibility 5m.
2195	240	WA04	384849	5671625	00:04:11	WA04 support L-shaped angle iron. Diver reports scour in the centre of the wreck.
2196	240	WA05	384856	5671631	00:09:40	ROV Trak position bad. Video shot taken looking along axis of vessel with compass in shot.
2197	240	General boilers shot	384857	5671641	00:10:50	
2198	240	Boilers near WA06	384859	5671643	00:13:38	
2199	240	WA08	384860	5671658	00:15:22	
2200	240	WA09	384858	5671654	00:18:00	
2201	240	WA07	384857	5671651	00:20:31	ROV Trak position bad.
2202	240	WA10	384860	5671655	00:23:26	ROV Track position bad.
2203	240	Left bottom	384860	5671626	00:27:41	Depth 26m.
2204	240	Made bottom	384886	5671671		Depth 26.25m.
2205	240	Stern post	384885	5671682	00:03:22	
2206	240	WA14	384882	5671687	00:05:03	Rov Trak tracking well. Distance from the datum on the stern post to the seabed: 0.89m.
2207	240	WA15	384877	5671675	00:10:56	
2208	240	Circular object	384872	5671665	00:12:14	
2209	240	WA16	384871	5671666	00:13:36	
2210	240	Panoramic of boiler aft	384866	5671667	00:15:13	
2211	240	WA13	384868	5671672	00:19:54	
2212	240	WA14 stern post	384883	5671687	00:21:38	
2213	240	Left bottom	384877	5671675	00:23:54	Depth 26.75m.

APPENDIX III: NOTES ON SITE HISTORY

The *Iona II*

The *Iona II* was a paddle steamer built in 1863 at the yard of J. & G. Thompson of Govan in Scotland. She was built to be used as a fast ferry around the Clyde. That the vessel was built for speed can be seen in the dimensions of the ship. She had a length of 245 ft, a beam of 25ft, draught of 9ft and with paddle wheels of 20ft diameter; the ship was capable of 24 knots. The same shipyard was also directly commissioned by the Confederate Government to build an armoured frigate of 3,200 tons in 1861. The means of propulsion was by a specially designed twin-cylinder oscillating engine. This was a steam engine whose cylinder oscillates on trunnions instead of being permanently fixed in a perpendicular or other direction, and was said to be the "newest and most excellent [of] models" at the time of its installation (Duckworth and Langmuir 1987).

This sort of vessel was greatly valued by the Confederate Navy because their speed enabled them to escape the Federal blockade of supply routes. As a result after only one season working as the Clyde ferry Confederate agents bought the vessel on behalf of Charles Hopkins Boster of Richmond, Virginia. Thereafter she was re-fitted for her new role and the trip across the Atlantic.

The engine room of the *Iona II* was reported to be un-enclosed on three sides except for rails, and was said to be a "little palace in its airiness and perfect cleanliness" (Duckworth and Langmuir 1987). It is not clear whether this open arrangement was changed when she was converted.

The *Iona II* left the Clyde on 19th January 1864 under the command of Captain Chapman. At this time she was observed to have been fitted with a schooner rig, including a new mainmast and was heavily laden with coal and cargo. The ship headed down the Irish Sea to Queenstown (now Cobh near Cork) in the Republic of Ireland, and there re-coaled in readiness to cross the Atlantic. Whilst in Queenstown, 13 of the crew refused to work the ship, whereupon they were arrested and charged with mutiny.

After leaving Queenstown the *Iona II* ran into heavy weather. Even though her hull had been especially strengthened for the voyage hours of pounding by heavy seas caused the vessel to leak, or otherwise take on water. As a result the master decided to head for Milford Haven in West Wales. She was unable to make it into Milford Haven and on 2nd February 1864 she sought refuge in the Bristol Channel where she ran in under the lee of Lundy Island taking in water fast, the incoming water put out the boilers causing the pumps to stop. The Bristol Pilot boat was on hand to rescue the crew and shortly afterwards the *Iona II* foundered in approximately 20 metres of water to the east of Lundy Island.

Even before the vessel left Queenstown, Federal agents had taken note of its presence. This is from the US Consul at Queenstown, dated February 4th 1864: "The steamer *Thistle* arrived and sailed yesterday bound for Nassau, from Glasgow, laden with general cargo. It is paddle wheel, and as she only stopped in the outer harbor, can not give description of her. The *Iona*, described in my last dispatch, foundered about twenty-four hours after leaving Queenstown." Unfortunately the dispatch that refers directly to the *Iona II* does not survive.

Contemporary accounts stated that salvage work was carried out soon after the sinking and that a consignment of arms on board, destined for the Confederate army, was taken from the wreck.

The site was discovered in 1976 when a diving company found it by chance whilst looking for the wreck of the *MV Robert*, a merchant vessel that sank less than 100 metres away. The ADU visited the site in 1989 and the *Iona II* was designated in January 1990.

The *Iona II* is one of only two known blockade runners in UK waters and the wreck is also one of the few examples of the high side-wheel steamers that were developed on the Clyde during the 1850s and 1860s. The type of steam engine used became obsolete soon afterwards, and therefore the wreck provides an extremely rare example of this type of machinery.

The wreck is at risk from sports divers who initially come to the area to dive the nearby *MV Robert* but often finish off their diving by visiting the *Iona II*. Divers had removed all brass fittings during the years before designation. This information was obtained from a dive magazine from 1984 in which the article highlighted wrecks in the area, and stated that salvage was taking place on the *Iona II*, and artefacts were being sent to Greenock Museum.

Comparison with Sister Ships and Other Vessels

Two other paddle steamers named *Iona* were made by J. & G. Thompson, these were the *Iona* and the *Iona III*. The *Iona* was built in 1855 with the following specifications:

- Tonnage 174
- Length 225' 3"
- Beam 20' 5"
- Draught 9'
- Machinery Oscillating
- Speed 17½ knots

She was employed on the Glasgow to Ardrishaig route, where she became known as a popular and fast ship. In 1862 she was bought by Confederate agents to act as a blockade runner in the American Civil War. Her superstructure was removed (and was later used on the *Iona II* before again being removed and re-used on the *Iona III*) and she was painted grey to camouflage her. On her way down the Clyde at night with no lights showing she was hit by the steamer *Chanticleer* and sank.

It is not known whether there has been any formal archaeological work on this site, but an isometric sketch of the site has been published in Clyde Shipwrecks by Peter Moir and reproduced in Fenwick and Gale (1998). The drawing shows a vessel that is similar to the *Iona II* in terms of the surviving structural elements, but with differences in the number and layout of the boilers (the *Iona I* had eight boilers in two groups of four lying at right angles to the line of the vessel). This site is not designated.

The *Iona III* was built in 1864 to replace the *Iona II*. She was extremely successful and remained in service until 1936, when after 72 years of service she was broken up.

Other steamships similar to the *Iona II* were bought by the Confederates, such as the *Denbigh* which had originally been used to carry passengers between Liverpool and the seaside town of

Rhyl on the North Wales coast. The *Denbigh* managed to cross the Atlantic and after a near miss on its first blockade run (the vessel was stuck on a sandbank for over a day and was under fire from a Federal ship during this time) she had a successful career as a blockade runner that ran from January 1864 to May 1865.

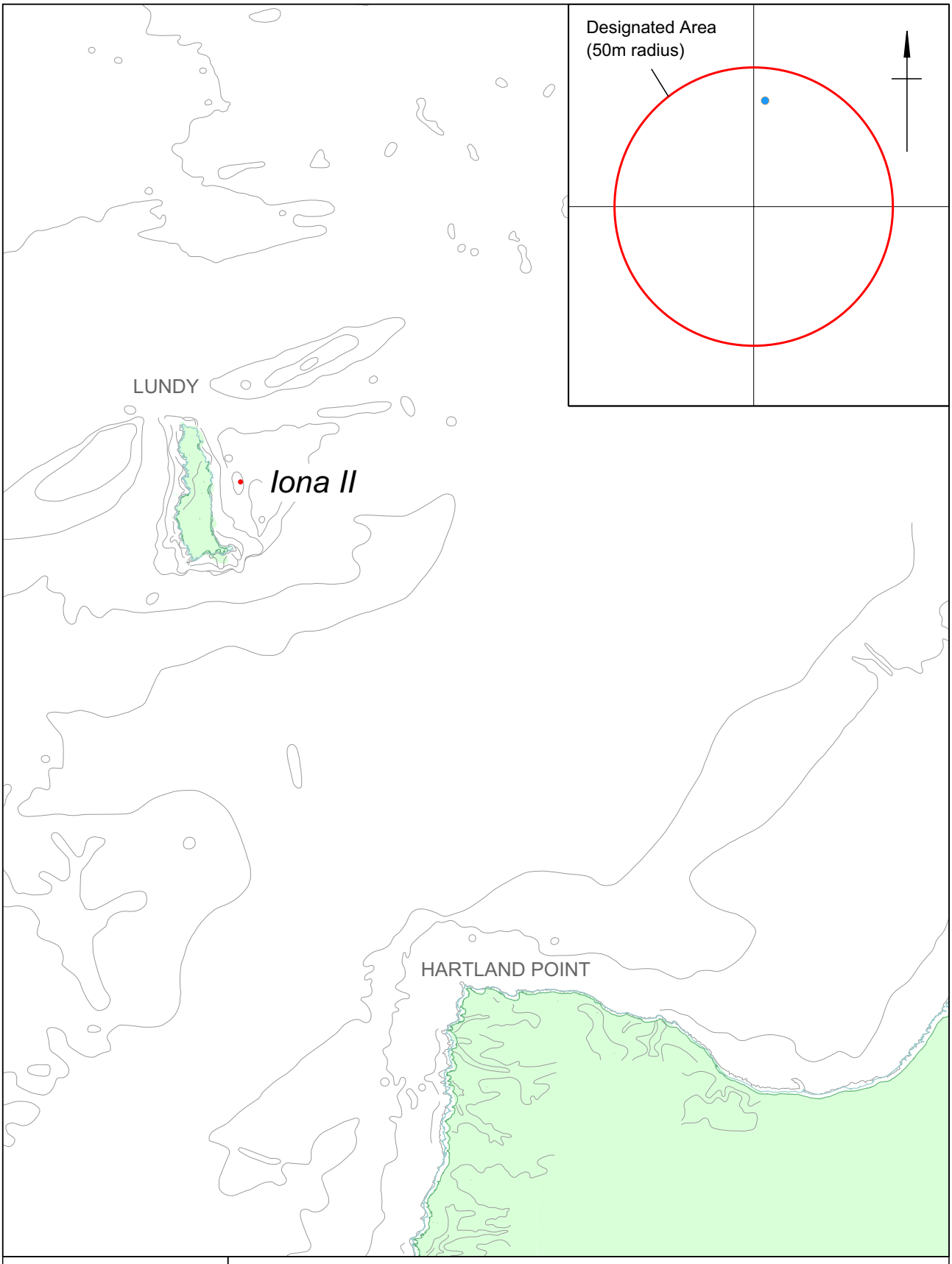
As with many other blockade runners, the *Denbigh* was not necessarily fast or had a large cargo capacity, but being steam powered had the ability to sail against the wind and thus could slip past the Federal ships to bring much-needed supplies to the southern ports. If the *Iona II* had managed to cross the Atlantic there is a good possibility that the vessel, with its added advantage of great speed, would have become a successful blockade runner itself.

APPENDIX IV: MONITORING POINTS

Point Details		2004 WA Visit Details			2000 MADU Survey	1992 ADU Visit Details		Unknown Visit Details	
MP No.	**Co-ords WGS84 UTM Zone 30**	**Dive details**	**Photo No.**	**Description**	**Comparison with 2004**	**Photo No.**	**Comparison with 2004**	**Photo No.**	**Comparison with 2004**
01	384861.33 5671671.39	Dive 235 Obs. 2141	DSC00030.JPG	WA01 iron frame on starboard side in stern area	-	-	-	-	-
02	384864.89 5671678.09	Dive 235 Obs. 2142	No photo	WA02 iron support along central axis in stern area	-	-	-	-	-
03	384867.99 5671678.1	Dive 235 Obs. 2143	DSC00032.JPG	WA03 iron frame port side astern of boiler	-	-	-	-	-
04	384848.43 5671624.87	Dive 238 Obs. 2174	No 2901 -04	WA04 first visible frame from bow on port side in bow area	Possibly slightly more exposure in 2004, otherwise no change.	-	-	-	-
05	384853.17 5671633.16	Dive 238 Obs. 2175	2905 -07	WA05 first support frame visible from the bow running along the keel	No change.	-	-	-	-
06	384855.44 5671642.66	Dive 238 Obs. 2176	2908-11	WA06 port forward boiler	Bulkhead missing in 2004, not clear whether this was seen in 2000.	-	-	North end of south-east boiler	Poor photo but shows integrity of boiler, little change to 2004 though there appears to be more silt inside the boiler.
07	384862.93 5671645.08	Dive 238 Obs. 2177	2925-26	WA07 hull plating on port side near forward port boiler	No comment in 2000.	Iona II 07-89-29	Section looks very similar to photo taken in 2004, little evidence of deterioration.	-	-

Point Details		2004 WA Visit Details			2000 MADU Survey	1992 ADU Visit Details		Unknown Visit Details	
MP No.	**Co-ords WGS84 UTM Zone 30**	**Dive details**	**Photo No.**	**Description**	**Comparison with 2004**	**Photo No.**	**Comparison with 2004**	**Photo No.**	**Comparison with 2004**
08	384862.93 5671645.08	Dive 238 Obs. 2178	2917-22	WA08 base of funnel lying on portside of wreck, lying near port forward boilers and portside crankshaft	No comment in 2000.	-	-	-	-
09	384857.37 5671657.71	Dive no 238 Obs. 2179	2923-24	WA09 attached to possible remains of a paddle wheel on port side	No substantial change between 2000 and 2004.	Iona II 1992-29	Appears to be end of crankshaft with paddle wheel hub attached. Wheel not intact.	-	-
10	384855.11 5671661.99	Dive 238 Obs. 2180	2927-34	WA10 portside crankshaft tag attached to possible piston	Condition is apparently the same as in 2004, though more corrosion was reported during the later visit.	Iona II 1992-28	Part of crankshaft, less concretion than 2004.	Crank shaft looking south	Part of mosaic taken in early 2990s. Less concretion.
11	384854.91 5671656.73	Dive 239 Obs. 2183	No photo	WA11 attached to bottom of starboard paddle wheel	-	Iona II 07-89-33	Possible remains of starboard paddle wheel.	-	-
12	384861.32 5671662.28	Dive 239 Obs. 2185	No photo	WA12 port side boiler stern centre point at forward end	-	Iona II 07-89-31	This picture is of the starboard boiler, but the point is less than 0.5m way. Little evidence of deterioration since 1992.	-	-
13	384870.34 5671668.22	Dive 239 obs2186	2912	WA13 Ballast mound area stern	-	-	-	-	-
14	384882.48 5671686.24	Dive 239 Obs. 2188	2913-16	Stern post, on furthest post at end of wreck	No comment in 2000.	-	-	-	-
15	384881.24 5671675.75	Dive 239 Obs. 2189	No photo	WA15 first frame on port side near stern	-	-	-	-	-
16	384886.41 5671671.39	Dive 239 Obs. 2190	No photo	WA16 frame on port side	-	-	-	-	-

Point Details		2004 WA Visit Details			2000 MADU Survey	1992 ADU Visit Details		Unknown Visit Details	
MP No.	**Co-ords WGS84 UTM Zone 30**	**Dive details**	**Photo No.**	**Description**	**Comparison with 2004**	**Photo No.**	**Comparison with 2004**	**Photo No.**	**Comparison with 2004**
17	384874.29 5671664.51	Dive 239	No photo	WA17 portside funnel out side of wreck	Slightly more buried in 2004.	-	-	-	-
18	384871.57 5671640.63	Dive 238	DSC001 0130-33	Possible section of wheel fragment found outside wreck	-	-	-	-	-
19	384848.91 5671619.67	Dive 236 Obs. 2161	DSC001 34 -36	Bow area	-	-	-	-	-
20	384866.71 5671660.5	Dive 234 Obs. 2130	2925-28	Firebox	-	-	-	-	-
21	384891.76 5671683.33	Dive 237 Obs. 2164	No photo	Area between stern of *Iona II* and *MV Robert*. No debris exists in 2004	-	-	-	-	-
22	384877.37 5671687.9	Dive 232 Obs. 2105	No photo	Seabed description: loose seabed, some shingle and gravel, poorly sorted.	-	-	-	-	-
23	384876.193 5671662.985	Dive 232 Obs. 2108	2944-47	Base of funnel on top of forward boilers	-	-	-	21-23	Poor quality photos. Appears to be more silt inside boilers, almost to rim of funnel base.



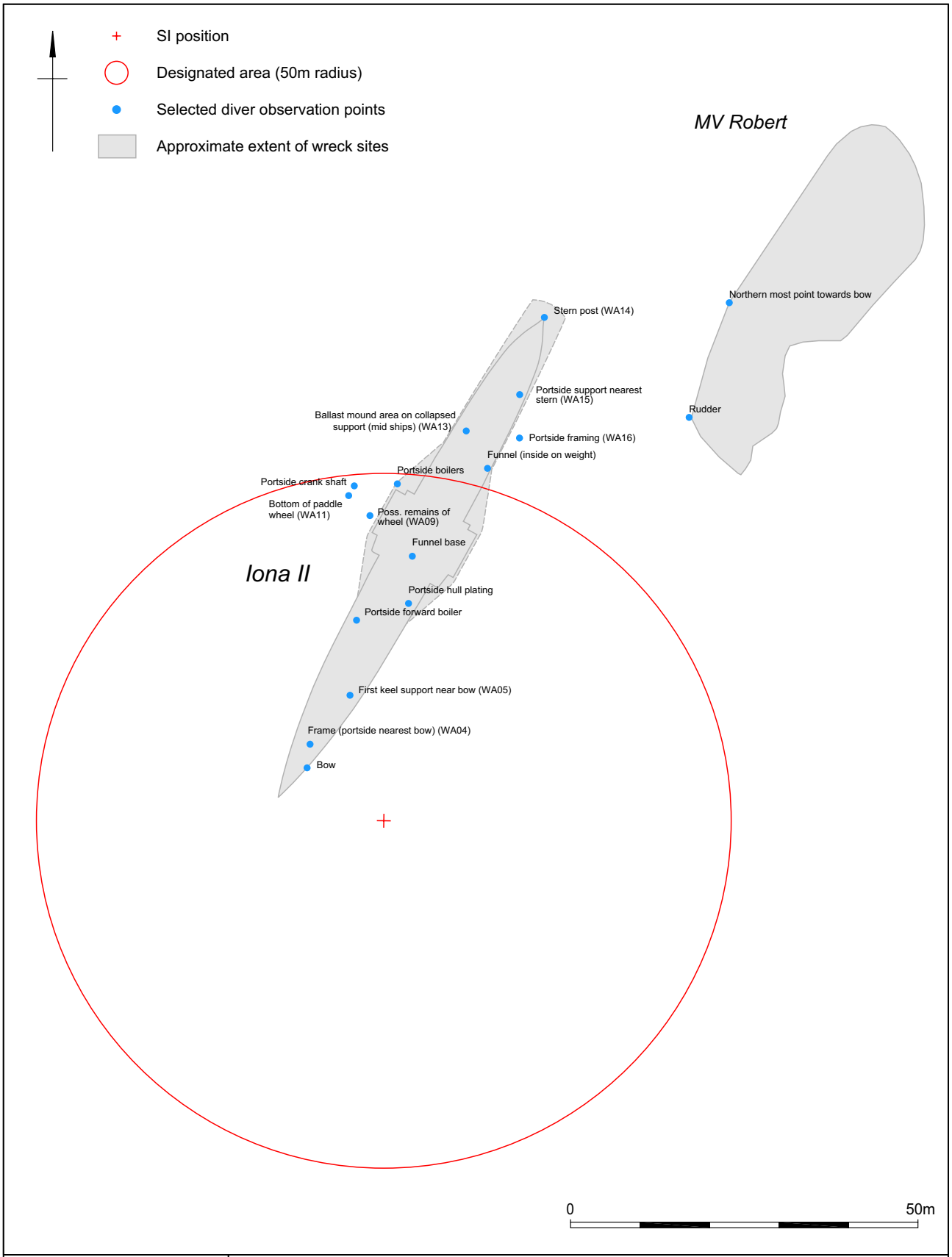
● Tracked diver position for funnel base (Obs WA08) 51°08.278 N 04°31.499 W (WGS. 84)

Wessex Archaeology

Date:	26/01/05	Revision Number:	0
Scale:	1:200,000 & (inset) 1:4000	Illustrator:	KJB
Path:	W:\53111\Drawing Office\Report figures\2004\Full Report\2004_Iona II.dwg		

Iona II site location

Figure 1



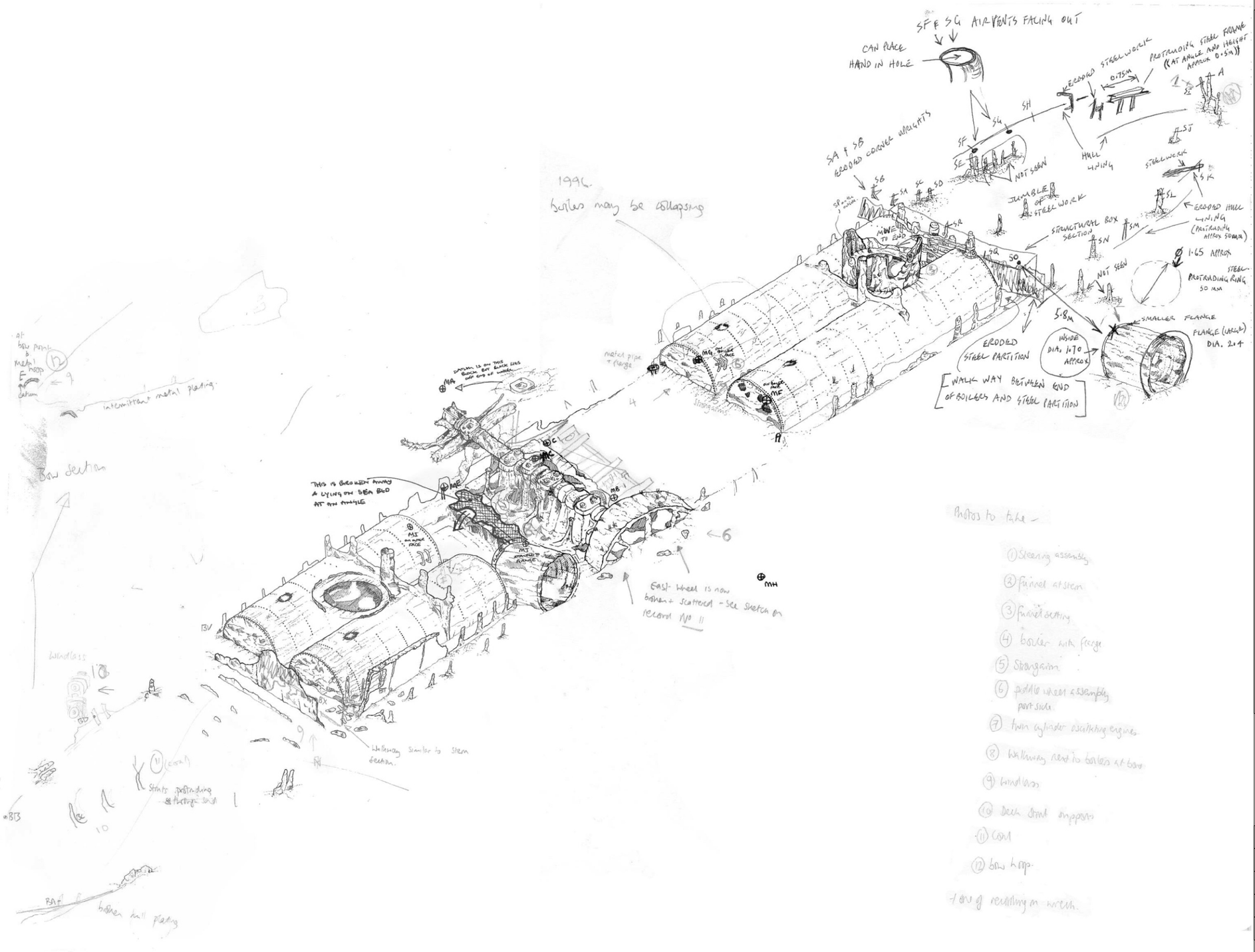
Co-ordinate system:
UTM WGS84 zone 30

Date:	02/02/05	Revision Number:	0
Scale:	1:800	Illustrator:	KJB
Path:	W:\Projects\53111\DO\Report figs\2004\z_30 2004_Iona II\Full report\Figure 2.dwg		

Wessex Archaeology

Position of The *Iona II* relative to the designated area and the *MV Robert* Figure 2

Wessex Archaeology



Revision Number:	0
Illustrator:	KJB
Date:	23/02/05
Scale:	N/A
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Report figures\2004\Iona II\Full Report\Figure 3.cdr	

Carol Rule's isometric plan, showing Ian Cundy's monitoring data

Figure 3

RE-CONSTRUCTION SHOWING APPEARANCE OF

P.S. "IONA"

SCALE 1/100 (0·120" = 1ft)

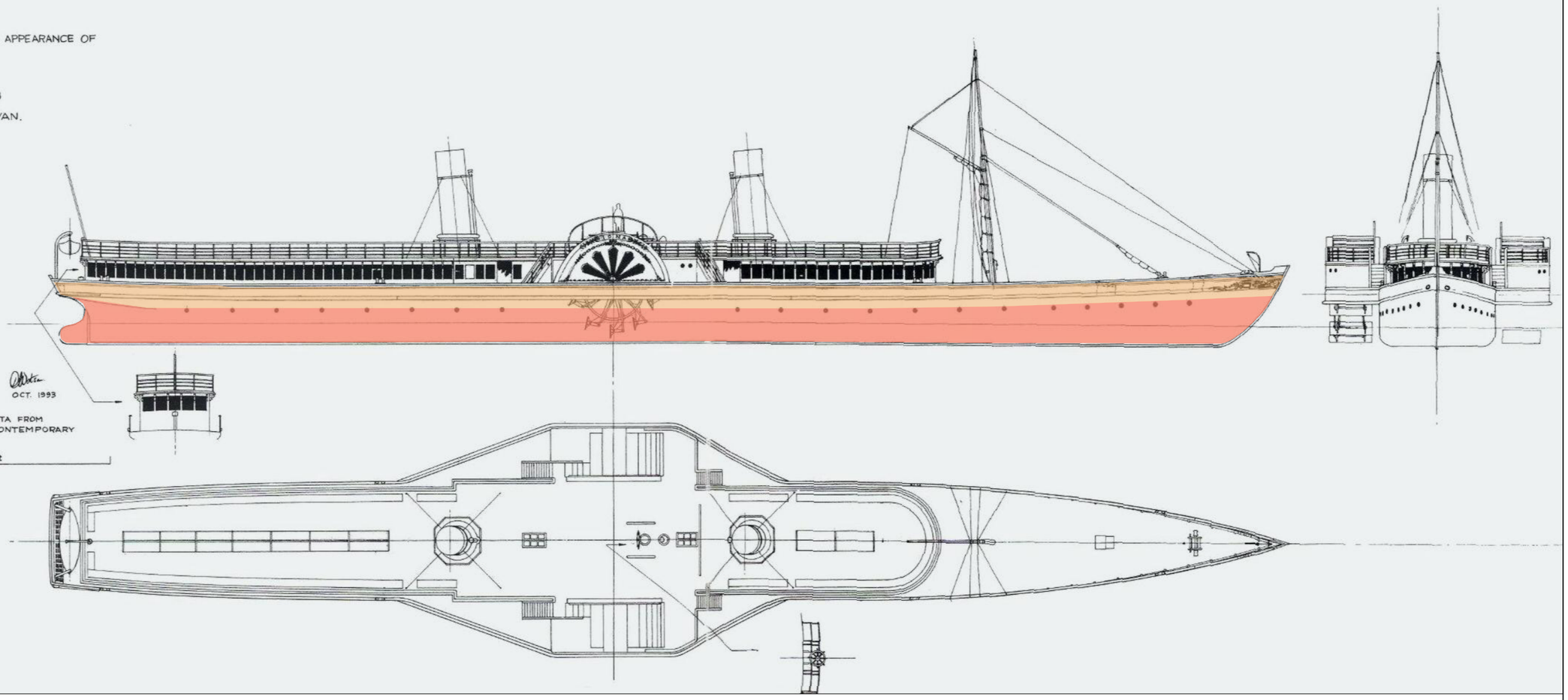
BUILT OF IRON IN 1863
BY
J. & G. THOMSON, GOVAN.

LENGTH O.A.		
LENGTH B.P.	249·2	ft
BREADTH (HULL)	25·0	ft
BREADTH (EXT)		
DEPTH	9·1	ft
DRAUGHT	4·0	ft
WEIGHT		

DRAWN BY D. WATSON
CLARKSTON
GLASGOW
OCT. 1993

BASED ON DIMENSIONAL DATA FROM VARIOUS SOURCES AND CONTEMPORARY STEAMER PICTURES.

6" = 50ft



Approximate extent of fully surviving structure

Approximate extent of partially surviving structure

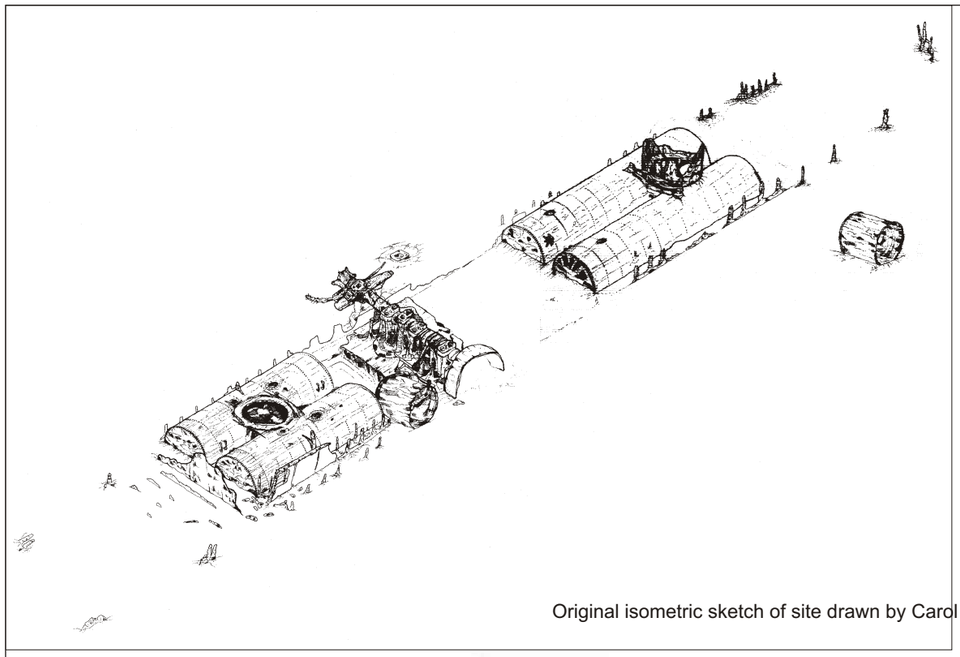
0 10m

Wessex Archaeology

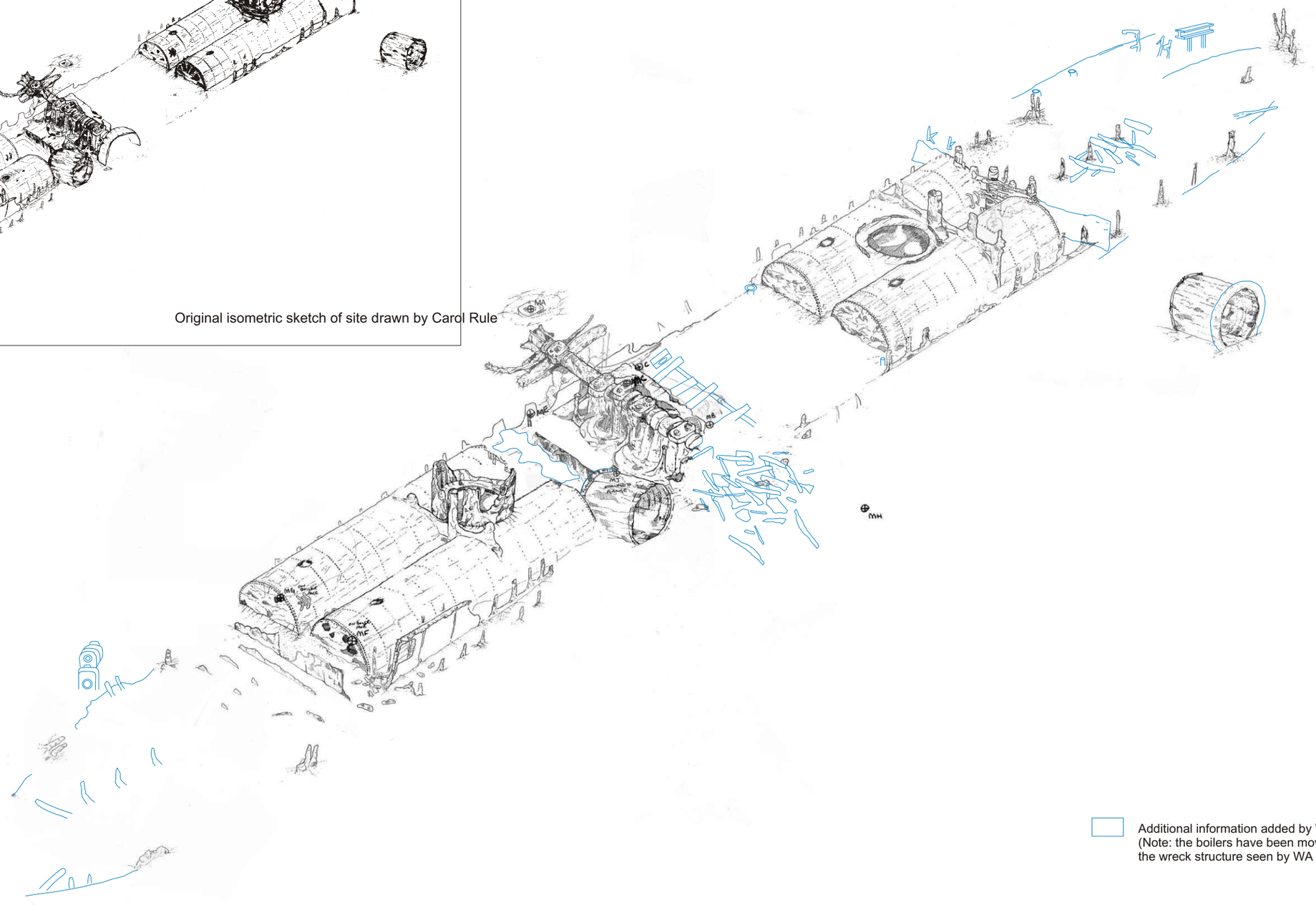
Date:	22/02/04	Revision Number:	0
Scale:	1:300	Illustrator:	KJB
Path:	W:\Projects\53111\DO\Report figures\2004\Iona II\Full report\Figure 4.dwg		

Architect's plan of The *Iona II* (D. Watson, 1993)

Figure 4



Original isometric sketch of site drawn by Carol Rule



Additional information added by WA (2004)
(Note: the boilers have been moved to reflect the wreck structure seen by WA in 2004)

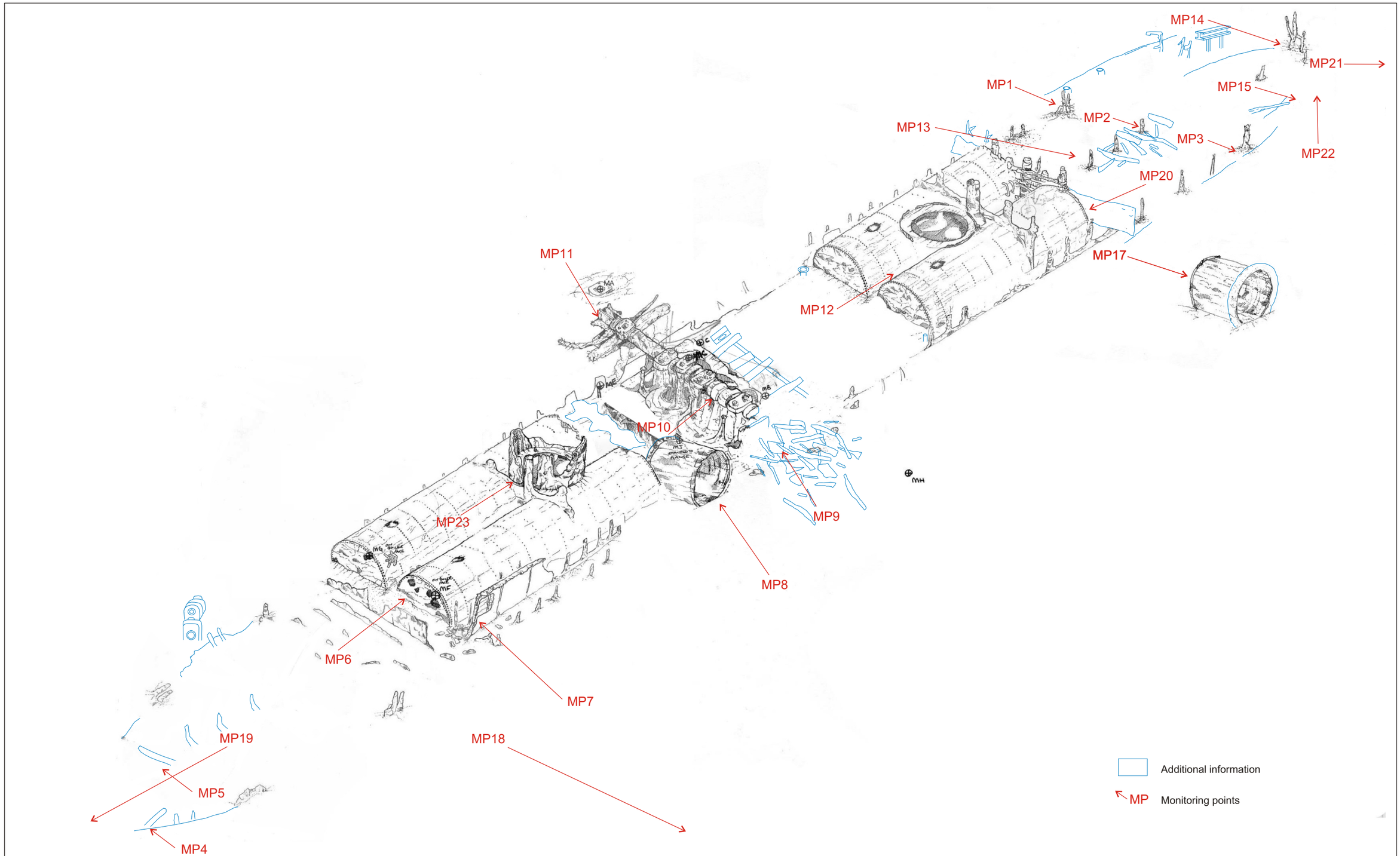
Wessex Archaeology

Original plan by C. Rule (see inset), amended by WA (including information from I. Cundy monitoring plan).

Date:	01/03/05	Revision Number:	0
Scale:	N/A	Illustrator:	KJB
Path:	W:\Projects\53111\Drawing office\Report figures\2004\Iona II\Full report\Figure 6.cdr		

Updated isometric sketch plan of site produced by WA

Figure 5



Wessex Archaeology

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Scale:	N/A	Illustrator:	KJB
Path:	W:\Projects\53111\Drawing office\Report figures\2004\Iona II\Full report\Figure 5.cdr		

WA isometric sketch plan of site showing monitoring points

Figure 6

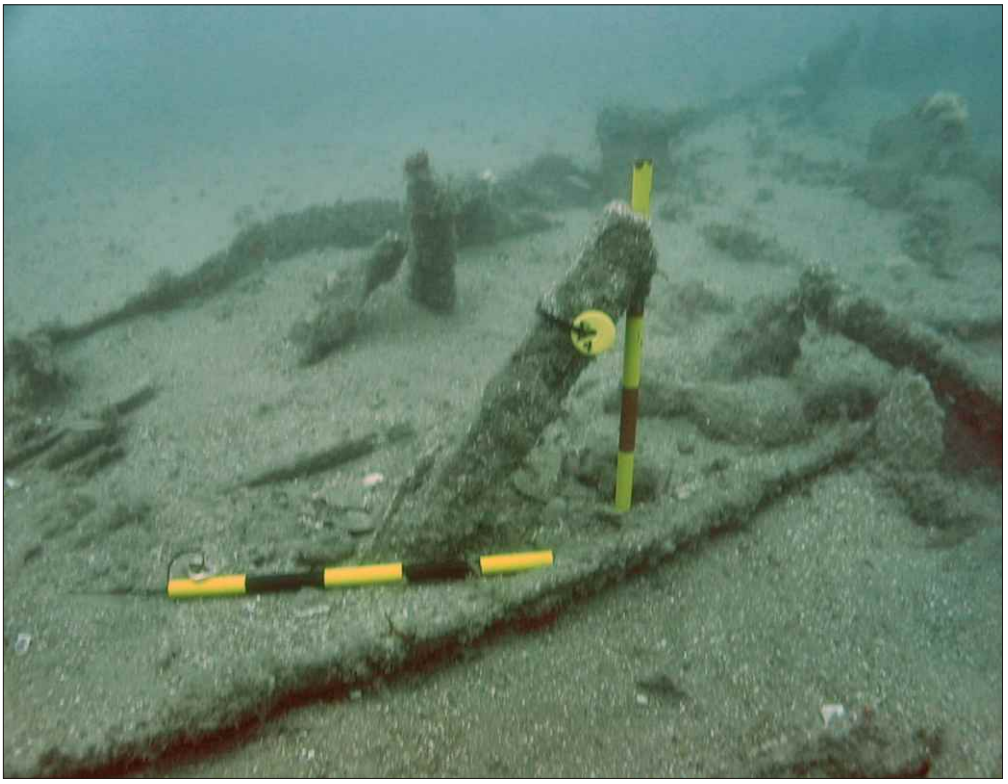


Plate 1: Frame (MP4)

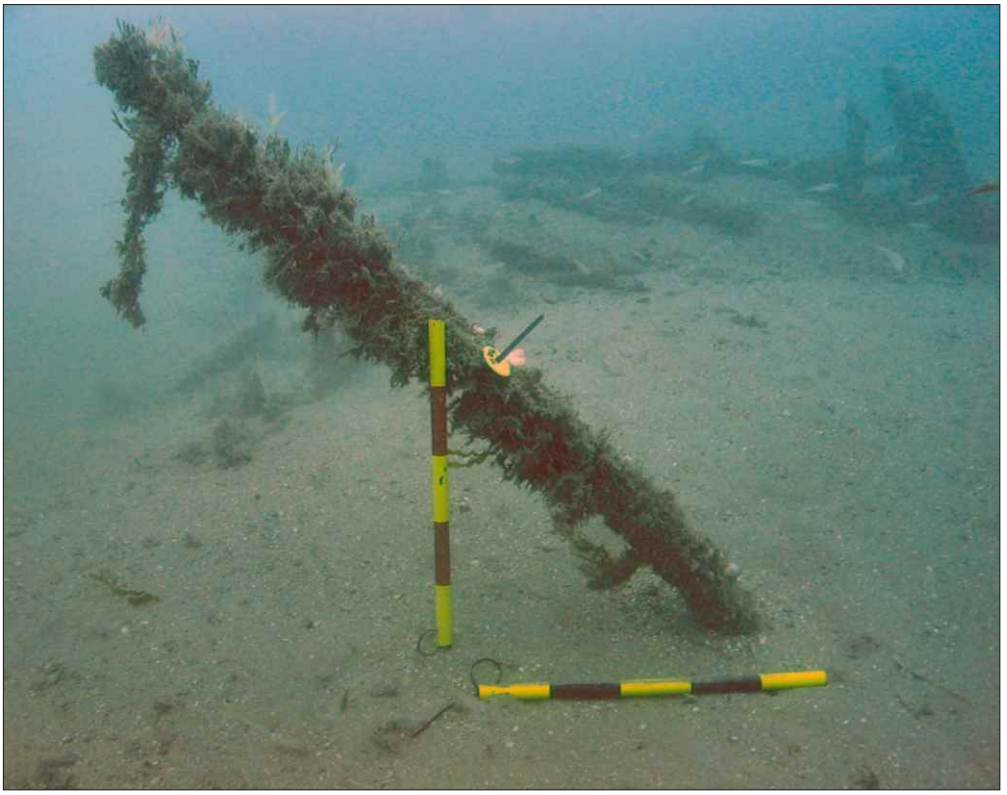


Plate 2: Frame (MP5)

Wessex Archaeology	Date:	14/10/04	Illustrator:	KJB
	Path:	W:\Projects\53111\DO\Report Figs\2004\z_30 Iona II\Full report\plates.cdr		

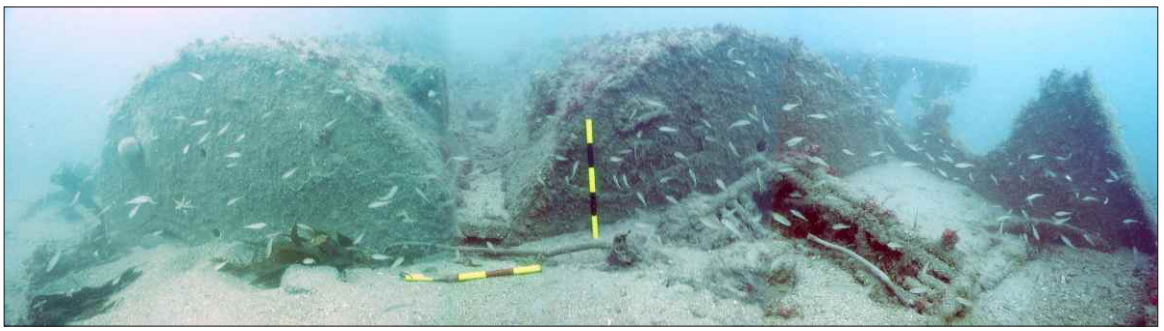


Plate 3: Forward boilers (MP6)

Plate 4: Side structure (MP7)

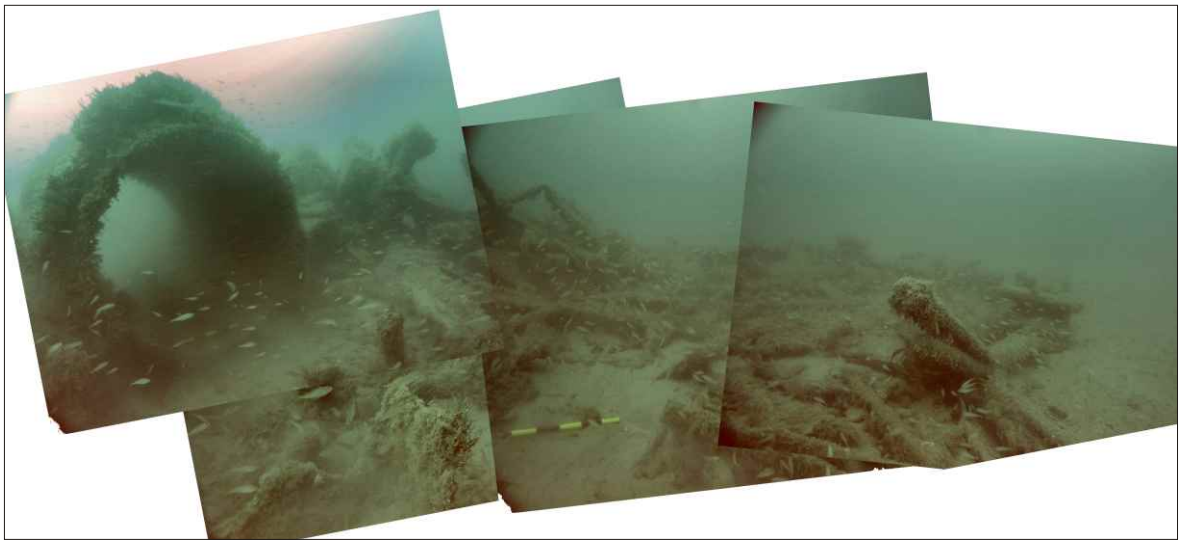


Plate 5: Funnel (MP8)

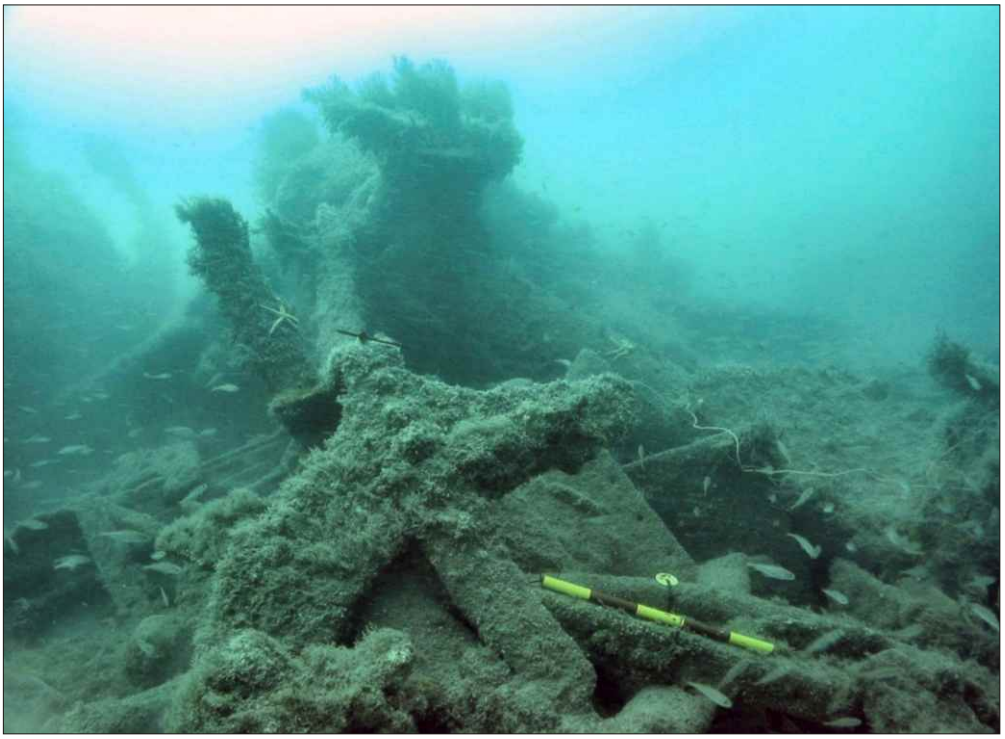


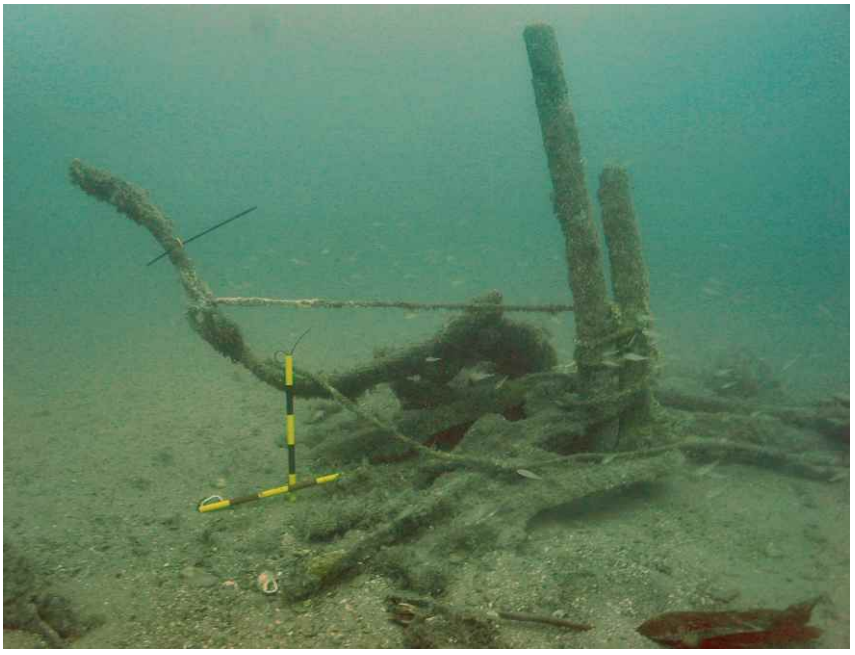
Plate 6: Broken paddle wheel at end of crank shaft (MP9)

Plate 7: Crank shaft (MP10)

Plate 8: Stern post (MP14)

Plate 9: Funnel (MP17)

Plate 10: Side structure on portside near bows



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