



HMS Campania, Firth of Forth, Scotland

Designated Site Assessment:

Full Report



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

HMS CAMPANIA, FIRTH OF FORTH, SCOTLAND

DESIGNATED SITE FULL REPORT

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Summary

Wessex Archaeology was commissioned by Historic Scotland to undertake a geophysical survey of the Designated Site of the *HMS Campania*: a designated wreck site located within the Firth of Forth, Scotland. The work was undertaken as part of the contract for Archaeological Services in Relation to the Protection of Wrecks Act (1973).

The *Campania* was built by Fairfields at Govan, and at 18,000 tons displacement was an enormous vessel in comparison with her contemporaries. The *Campania* was launched on 8th September 1892 and was the first Cunard vessel to dispense completely with sail and to have twin shafts. She was later bought by the Admiralty and converted into a seaplane carrier and armed merchant cruiser. After conversion at Cammell Laird's in Birkenhead, she was commissioned in February 1915.

In 2000 the site was designated under the Protection of Wrecks Act with Mark Blyth as the Licensee. Despite a series of salvage and demolition attempts the wreck is currently a large upstanding structure that is surrounded by numerous small items of debris. There were also a number of sidescan sonar anomalies thought to be associated with the wreck but which lie outside of the current designated area.

Survey operations took place between 2nd and 6th August 2004. The sidescan sonar survey produced several detailed images of the wreck and a mosaic of the surrounding seabed. To the west of the main site there was an anomaly which may possibly be related to the anchoring system from which the *HMS Campania* broke free. This anomaly lies outside the current designated area and would require further investigation before its true origin could be identified.

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Acknowledgements

This investigation was commissioned by Historic Scotland as part of the contract for Archaeological Services in Relation to the Protection of Wrecks Act (1973). The assistance provided by Gordon Barclay, Deirdre Cameron and Andrew Burke of Historic Scotland is gratefully acknowledged.

Wessex Archaeology would also like to thank the following people:

- Licensee Mark Blyth and site archaeologist Philip Robertson for their invaluable assistance during this survey.

The fieldwork was carried out by Dr Paul Baggaley and Dr Richard Bates. The data was processed and interpreted by Paul Baggaley who also compiled this report. Kitty Brandon prepared the illustrations and the project was managed for Wessex Archaeology by Steve Webster.

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- Digital use of Chart 733

A copy of the report will be sent to UKHO.

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Contents

1. INTRODUCTION.....	1
2. OBJECTIVES	1
3. EXISTING SITE DATA.....	1
4. METHODOLOGY	2
4.1. Introduction.....	2
4.2. Sidescan Sonar Survey	2
4.3. Sub-Bottom Profile Survey	2
4.4. Bathymetric Survey	3
4.5. Data Processing and Anomaly Characterisation	3
5. RESULTS	4
5.1. Site Position 2004	4
5.2. Bathymetry and Geology.....	4
5.3. Archaeological Features	5
6. CONCLUSIONS	7
7. RECOMMENDATIONS.....	7
8. REFERENCES.....	8
APPENDIX I: NOTES ON <i>HMS CAMPANIA</i>.....	9
APPENDIX II: SIDESCAN SONAR ANOMALIES	11

Figures

Figure 1	<i>HMS Campania</i> site location
Figure 2	Sidescan sonar mosaic
Figure 3	Selected sidescan sonar images

Plates

Plate 1	<i>HMS Campania</i> before being rebuilt as an aircraft carrier in 1914
Plate 2	<i>HMS Campania</i> sinking following a collision in 1918

HMS CAMPANIA, FIRTH OF FORTH, SCOTLAND

DESIGNATED SITE GEOPHYSICAL SURVEY: FULL REPORT

Ref: 53111.03p

1. INTRODUCTION

- 1.1.1. This document constitutes a Designated Site 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 Historic Scotland (HS). It comprises a geophysical survey of the *HMS Campania*, a designated wreck site located within the Firth of Forth (**Figure 1**).
- 1.1.2. The work was conducted in accordance with a Written Scheme of Investigation (WSI) prepared by WA. The survey was undertaken between 2nd and 6th August 2004. All surveying took place off the survey vessel owned and operated by St Andrews University. The field team personnel were WA marine geophysicist Dr Paul Baggaley, the vessel skipper and geophysicist Dr Richard Bates of St Andrews University.

2. OBJECTIVES

- 2.1.1. The overall objective for the site as defined in the WSI was for recording to Level 1b.
- 2.1.2. This was further defined in the WSI, specifying the following tasks:
- produce a single geo-referenced sidescan sonar image of the designated wreck site and its surroundings;
 - provide co-ordinates and database entries for all sidescan sonar targets detected over the survey area;
 - attempt to identify a methodology whereby the Licensee can expand upon this survey in a way that will produce structured archaeological data;
 - attempt to establish the shallow geological conditions underlying the site;
 - produce a scheme of investigation for subsequent investigations on the site.

3. EXISTING SITE DATA

- 3.1.1. The position of the designated area as given in the Statutory Instrument (SI) was as follows:

Lat.	56° 02.408' N
Long.	03° 13.412' W
OSGB 36	

3.1.2. The SI number is 384, and from the centre point (defined above) the designated area is a circle with a radius of 150 metres. The current Licensee is Mr Mark Blyth and the nominated archaeologist is Mr Philip Robertson.

3.1.3. Other information available prior to and during the assessment comprised:

- the UK Hydrographic Office record for the site;
- the National Monument Record of Scotland entry for the site;
- ADU Reports for years 1993, 1999 and 2000;
- various books and web sites (see references).

4. METHODOLOGY

4.1. INTRODUCTION

4.1.1. The survey methods used over the *HMS Campania* were sidescan sonar and sub-bottom profiling. This methodology was discussed with the Licensee prior to the commencement of survey operations to assess practicality and possible amendments and suggestions.

4.2. SIDESCAN SONAR SURVEY

4.2.1. A sidescan sonar system produces a qualitative image of the seabed using acoustic energy. The system has transducers on either side of the towfish which emit high frequency pulses of acoustic energy in a direction perpendicular to travel. These acoustic pulses are reflected from the sea floor back to the transducers where they are detected and recorded via a workstation onboard the survey vessel. The strength of the reflections is mainly dependent upon the properties of the seafloor materials with the result that different sediment types will produce different signal strengths. Any objects on the seafloor which have any topography, such as a wreck, sandwaves or a rock, will produce a shadow due to the low angle of incidence of the acoustic pulse from the towfish.

4.2.2. A Klein 3000 digital sidescan sonar system was used for the project. This sidescan sonar system collects data at both 100 kHz and 500 kHz simultaneously. For archaeological purposes the highest possible resolution was required and therefore the 500 kHz data was processed to enable the identification of anomalies. The sidescan towfish was towed at a depth to maximise anomaly detection but that avoided possible loss of the sonar fish due to contact with the seafloor or upstanding anomalies (i.e. the wreck).

4.2.3. Survey lines were run at 45-metre spacing throughout the survey area with a range setting of 50 metres. This ensured data coverage of greater than 200%. The data was collected digitally on a workstation using Klein SonarPro software, which stored the data in a suitable format for post-processing.

4.3. SUB-BOTTOM PROFILE SURVEY

4.3.1. A Geoacoustics pinger source was used for the sub-bottom profile. This system consists of a source and a receiver transducer housed within a single unit. The source

transducer generates an acoustic pulse downwards into the water column. The broad band frequency of this acoustic pulse is approximately centred on the five kHz frequency.

- 4.3.2. The acoustic energy propagates out from the source until it reaches an interface between two media with different acoustic impedance (the acoustic impedance of a material is the product of its density and seismic velocity). At each interface a portion of the energy is reflected back to the receiver transducer, which converts the acoustic energy it detects into an electrical signal for digital recording onboard the vessel.
- 4.3.3. The remaining energy continues to propagate further into the seabed and is partially reflected from different acoustic interfaces until it becomes too weak through attenuation to produce coherent return signal. The depth to which the acoustic signal can penetrate and still produce measurable reflections depends on the acoustic properties of the geology and the frequency content of the acoustic signal being emitted by the source.
- 4.3.4. Two orthogonal lines of sub-bottom data were collected over the site with the aim of characterising the sub-surface geological setting of the wreck site.

4.4. BATHYMETRIC SURVEY

- 4.4.1. A single beam echosounder was operating throughout both the sidescan sonar and sub-bottom profile surveys. The single beam echosounder survey records the depth of the seabed. The data was recorded digitally in Trimble HydroPro navigation software.

4.5. DATA PROCESSING AND ANOMALY CHARACTERISATION

- 4.5.1. The raw bathymetric data was processed by Dr Richard Bates to correct for tides and then interpreted using IVS Fledermaus software by WA. This allowed the single beam echosounder data to be converted into a surface representing the bathymetry of the survey area. This data set provided a vertical reference for the geophysical data.
- 4.5.2. The sidescan sonar data were processed and interpreted by WA using Coda Geosurvey software. This allowed the data to be replayed with various gain settings in order to optimise the quality of the images. The data were then interpreted for any objects of possible anthropogenic origin; the position and dimensions of any such objects were recorded in a gazetteer (**Appendix II**). The sidescan sonar data were then joined together to form a mosaic, giving a single georeferenced sidescan sonar image for the entire survey area (**Figure 2**). This image was then draped over the bathymetric data using IVS Fledermaus software in order to allow it to be viewed in conjunction with the Admiralty chart and other data sets. Individual images from the data set were selected and illustrated in **Figure 3**.
- 4.5.3. The raw sub-bottom profile data were processed and interpreted by WA using Coda Geosurvey software. The sub-bottom data were interpreted by delineating any strong boundaries between different geological layers.

- 4.5.4. All three data sets, sidescan sonar, sub-bottom and bathymetry data, were incorporated into a single 3D scene using IVS Fledermaus software, which allowed all the data sets to be viewed in conjunction with the background charts and mapping.
- 4.5.5. It should be emphasised that the identification of a feature on the basis of a sidescan sonar or sub-bottom profile survey does not imply that the feature is necessarily of archaeological interest. Many of the features so identified may prove to be of modern origin, geological exposures, features attributable to sediment movement, or scars from anchoring or dredging.
- 4.5.6. The form, size and/or extent of anomalies need not enable easy discrimination; a single small but prominent anomaly may comprise all that is present, or it may be part of a much more extensive feature that is largely buried. Similarly, a scatter of minor anomalies may define the edges of a buried but intact feature, or it may be all that remains as a result of past impacts from, for example, dredging or fishing. The application of a ratings system is therefore only a means of prioritising sites in order to inform any subsequent investigations; it does not constitute a definitive interpretation.

5. RESULTS

5.1. SITE POSITION 2004

Lat.	56° 02.404' N
Long.	03° 13.497' W
WGS84	

- 5.1.1. The above position is for a point approximately 50 metres from the bow of the vessel. The position-fix was obtained from the sidescan sonar data. The reading was converted from geographical co-ordinates (OSGB36) to geographical co-ordinates (WGS84) using Geodetic Calculator v2.4.1.
- 5.2. BATHYMETRY AND GEOLOGY**
- 5.2.1. The bathymetry of the seabed shoals from 25 metres in the southern part of the survey area to 22 metres in the northern part.
- 5.2.2. The seabed around the wreck site consisted of a mainly flat muddy bottom, mixed with some large areas of sand to the north of the wreck site. Tidal currents have created a large scour mark to the southwest of the wreck. This extends for at least 400 metres through an area where the seafloor is covered by sandy sediments.
- 5.2.3. The sub-bottom profile data shows that the sub-surface geology of the area is composed of undifferentiated layers with no observable features.

5.3. ARCHAEOLOGICAL FEATURES

Main Site

- 5.3.1. *HMS Campania* sank at anchor after a collision with the *HMS Revenge* during a storm on 5th November 1918. Reports suggest that it settled onto the seafloor largely intact (**Figure 2**). Sidescan images of the main wreck site (**Figure 3**) show that it is lying upright and in one piece measuring approximately 190m long and 20m wide.
- 5.3.2. The image shows that there is a large amount of structure still present and this has resulted in a complex appearance of the wreck, as shown in **Figure 3**. However, a number of features can be observed in the images. These include part of the flight deck, which has a distinctive lobe shape at the bow of the vessel, and parts of the cranes, of which there were three down each side (**Figure 3**).
- 5.3.3. In 1921 parts of the vessel were dynamited to remove the upstanding features on the wreck that had been deemed to be a hazard to shipping. Some of these features, including the main mast, can be identified in the sidescan image running down at an angle from the wreck onto the seafloor (**Figure 3**).
- 5.3.4. Despite the removal of these prominent features, the wreck is still largely upstanding and an estimate of its height can be made from the sidescan sonar and the single beam bathymetry records. The sidescan records indicate a height of approximately eight metres for the highest spot of the wreck. The shallowest depth recorded by the single beam echosounder was 11.9 metres and the Admiralty Chart indicates a minimum depth of 12.6 metres over the wreck site. The figure quoted on the Admiralty Chart will have been produced by wire drifting over the wreck and is likely to be the most reliable figure.
- 5.3.5. From the orientation of the scour mark around the wreck it is apparent that the dominant direction of current flow within this region of the Firth of Forth is south-westwards. The scour mark is approximately 80 metres wide; this is due to the combination of the *HMS Campania*'s NE-SW orientation and the current direction.
- 5.3.6. A number of small objects appear to be lying on the seafloor on the southern side of, and in close proximity to, the wreck. These objects have been included within the boundary around the wreck (**WA3035**) during the sidescan sonar interpretation and not tagged individually.

Other Anomalies within the Designated Area

- 5.3.7. Approximately 80 metres south of the main wreck site a collection of objects, including the base of a buoy (**WA3033** and **WA3034**) and associated objects (**WA3030**, **WA3031** and **WA3032**), were identified. Also in this area were an unidentified object (**WA3028**), a length of rope/cable (**WA3029**) and numerous small dark reflectors, which may be due to either small (c.0.5 metre) objects or the seabed geology.
- 5.3.8. Immediately to the north of the main wreck site there are very few identifiable objects. This may in part be due to the complicated seafloor geology of this area, however one object (**WA3014**) has been recorded as standing proud of the seafloor.

The origin of this object is unclear; it may be an isolated rock but given the flat nature of the seafloor in the rest of the survey area it is probably a piece of debris.

- 5.3.9. To the north-west of the wreck site is an object (**WA3027**) of apparent anthropogenic origin. It is circular and approximately one metre in diameter, and may be a tyre.
- 5.3.10. To the north-east of the wreck is an anomaly (**WA3022**) described as an object with a scour mark as it is not possible to determine whether it is of anthropogenic origin or not. This anomaly is in close proximity to three other anomalies (**WA3020**, **WA3021** and **WA3013**) which are outside the designated area.

Anomalies Outside the Designated Area

- 5.3.11. Approximately 200 metres south-west of the main wreck site, and on the southern edge of the scour mark, is an object (**WA3016** and **WA3024**) which appears to be a thin circular structure approximately nine metres in diameter. This object is apparently of anthropogenic origin and may have been part of the *HMS Campania*'s anchoring/mooring system. Alternatively it may be part of the Royal Navy's degaussing equipment. However, if the latter is accepted then a number of similar objects may be expected within the same area. No other such objects were observed.
- 5.3.12. Approximately 16 metres north-west of the circular feature is a linear object (**WA3017** and **WA3025**) which is at least three metres in length and may be a section of pipe or scaffolding. Also, to the north-east of the circular feature is another linear object (**WA3015**) some 1.8 metres in length. Due to their proximity it is possible that these linear objects may be associated with the circular feature (**WA3016** and **WA3024**).
- 5.3.13. To the west of the wreck is a linear object, identified by two anomalies (**WA3023** and **WA3007**), which measures approximately 2 metres by 0.7 metres, and stands up to 0.5 metres from the seabed. Further to the west of the main wreck was a small linear object (**WA3008**).
- 5.3.14. There are three anomalies to the north-east of the wreck (**WA3020** and **WA3021**) which are identified as objects with scour marks. It is not possible to determine whether they are of anthropogenic origin or not. However, another anomaly in this area (**WA3013**) is thought to be a tyre. All three of these anomalies lie very close to the wreck but are outside the designated area because the designated co-ordinate does not lie at the centre of the wreck.
- 5.3.15. To the north-east of the wreck is an object (**WA3001** and **WA3005**) of anthropogenic origin, but its exact nature is unclear. North of the wreck was a small item of debris (**WA3004**) also of apparent anthropogenic origin.
- 5.3.16. Further to the north, approximately 290 metres from the wreck, there was a 28-metre long section of rope or cable (**WA3002**). Finally, at the northern edge of the survey area there was a small object (**WA3003**) which may be of geological origin.
- 5.3.17. To the north-west of the wreck site is an object (**WA3006**) of apparent anthropogenic origin some 4 metres by 0.5 metres in size.

- 5.3.18. To the west of the wreck site were two circular objects (**WA3009** and **WA3026**) lying 25 metres apart. Both were approximately one metre in diameter and are identified as being tyres. Both of these anomalies are situated over 210 metres to the west of the main wreck.
- 5.3.19. A further 100 metres to the west of these two tyres was a section of rope or cable (**WA3010**) that was approximately seven metres in length.
- 5.3.20. Approximately 330 metres to the north-west of the wreck was an object (**WA3018** and **WA3011**) that measures five metres by one metre, and stands up to 0.5 metres high. This object is a linear patch of dark reflectors and is probably of anthropogenic origin.
- 5.3.21. Also to the north-west of the wreck are two further anomalies (**WA3012** and **WA3019**). The first of these is a circular bright reflector approximately 1.7 metres in diameter and with no apparent structure, while the second anomaly measures approximately 1.9 metres by 0.6 metres and stands up to 0.8 metres high, again with no apparent structure. While it is possible that these anomalies have a geological origin this is not certain.

6. CONCLUSIONS

- 6.1.1. The main body of the wreck is in one piece and has a considerable amount of the original structure remaining. This is despite attempts to salvage parts of the wreck and the demolition of upstanding features considered a danger to navigation. Other studies have shown that the flight deck is still a coherent structure (Richard Bates pers. comm.).
- 6.1.2. There are a number of sidescan sonar anomalies within close proximity of the wreck especially to the south as noted by Licensee. However, there are also sidescan sonar anomalies within the designated circle to the north, east and west of the wreck that may be of archaeological importance.
- 6.1.3. There are a number of sidescan sonar anomalies outside of the designated area, which may also be of archaeological importance. The most prominent of these is the large circular feature to the west of the wreck site, which may have been related to the anchoring system from which the *HMS Campania* broke free at the time of the sinking.

7. RECOMMENDATIONS

- 7.1.1. *HMS Campania* is a large site with unique and complex structures that are difficult to investigate due to the large size of the wreck. Although sidescan sonar investigations have been used to provide a large amount of information about the site it is difficult to visualise such a complicated wreck through this method alone.
- 7.1.2. Therefore, although expensive, this site may be best visualised and investigated using a multibeam sonar system. A Reson 8125 multibeam sonar system has the narrowest beamwidth of any such systems currently available and would provide the highest resolution detail of the features on the deck of wreck. However, new multibeam

systems, such as the 3D Echoscope made by Coda Octopus, can be used to give images of the sides of the vessel as well the top, providing a greater ensonification of the wreck.

- 7.1.3. Repeated, detailed 3D and sidescan surveys of the wreck could be used to monitor the slow, natural deterioration of the wreck, and allow it to be recorded. This wreck has already been lying on the seafloor for over eighty years and it is not known how much longer the upstanding structures will survive.
- 7.1.4. With the data from this survey as a baseline it is now possible to establish a monitoring regime for the site. Given the size of the wreck, and hence the time it would take to survey the site with divers, it may be appropriate to establish the maximum amount of information on the wreck, her history and the nature of the seabed remains prior to any future diving investigations by the Contractor. This would allow monitoring points to be established at points on the site that were both relevant in terms of the decay of the vessel, but which also addressed archaeological issues.
- 7.1.5. The current designated area does encompass the main structure of *HMS Campania* but there are a number of anomalies outside the designated area that may also be important elements of the site. It is recommended that these be investigated by a diver survey in order to assess their archaeological importance before any recommendation could be made on whether the designated area should be extended to include them.

8. REFERENCES

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Wessex Archaeology, 2003a, 'Archaeological Services in Relation to the Protection of Wrecks Act (1973): Written Scheme of Investigation', Unpublished Report Ref: 53111.01p.

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APPENDIX I: NOTES ON *HMS CAMPANIA*

The *Campania* was built by Fairfields at Govan, and at 600' l.o.a. with 18,000 tons displacement, was an enormous vessel in comparison to her contemporaries. The *Campania* was launched on 8th September 1892 and was the first Cunard vessel to dispense completely with sail and to have twin shafts. She made her maiden voyage from Liverpool to New York on 22nd April 1893, the return voyage set a new record passage from New York to Queenstown (now Cobh in Southern Ireland) in a time of 5 days 17 hours and 27 minutes. In June 1893 the record passage from Liverpool to New York was also beaten.

The *Campania* made 255 Atlantic crossings before she was finally sold on 15th October 1914 to a breakers yard in Liverpool and if it had not been for the outbreak of the Great War the *Campania* would almost certainly have been scrapped. The *Campania* was bought by the Admiralty and converted into a seaplane carrier and armed merchant cruiser. After conversion at Cammell Laird's, Birkenhead, she was commissioned in February 1915. The Admiralty had already converted three requisitioned ships to carry some seaplanes but *HMS Campania* was to be the first of the big new Fleet Air Arm carriers. A vast hold was made in the area of the original passenger accommodation that could stow fourteen seaplanes with their wings folded. The aircraft would be craned from the hold, their wings deployed and then lowered to the sea to take off; recovery was a reverse of this procedure.

On 30th April she left the Mersey to join the Grand Fleet in Scapa Flow, with Charles Lightoller, the senior surviving officer of the Titanic, as her First Lieutenant. During manoeuvres with the Grand Fleet several shortcomings were noted and *Campania* returned to Cammell Laird's to have a forward flightdeck fitted to allow aircraft to be flown into a head wind directly off the ship. At Scapa Flow on 5th May 1915, with the ship under way into a Force 4 wind, Lieutenant Breeze successfully flew a Sopwith Schneider seaplane, fitted with wheels, off the deck of the *HMS Campania*. This historic event inaugurated the advent of the modern aircraft carrier, though at the time deck landings were still experimental and the seaplane would make a traditional water landing.

Further trials proved the flightdeck to be too short and *HMS Campania* underwent a third refit. This time her after-deck was cleared to carry an observation balloon, and in order to allow for a longer forward flightdeck, the forward funnel was replaced by two smaller funnels athwartships. These alterations gave the vessel her final unique and distinctive appearance.

She returned to Scapa Flow and sailed with the Grand Fleet to provide spotting aircraft for the battle of Jutland. Fortunately for *HMS Campania* her tired engines could not produce the 27 knots required to stay with the fleet and she was ordered to turn about; had this not happened she would almost certainly have become a casualty of the engagement. The rest of *Campania's* war service was spent stationed at Scapa Flow. However, six days before the Armistice she was anchored off Burntisland with several other warships in the Firth of Forth. In the early hours of 5th November, during a gale, an anchor chain broke and she began to drag. Out of control *HMS Campania* collided with other nearby warships. The bow of *HMS Revenge* punched a hole in the port side of the *Campania* and she began to settle by the stern. All her crew safely abandoned ship but at 08:35 one of *Campania's* boilers exploded and she sank.

The wreck sat with masts showing above water for the next five years until it was declared a serious navigational hazard and the Admiralty contracted a salvage company from Sunderland

to deal with the obstruction. Large charges were placed on the decks and by 1921 the wreck had been substantially demolished to a safe clearance depth. Further to this destruction it is reported that salvage of valuable metals took place on the wreck, possibly during the late 1940s and the 1960s.

Prominent diving guides and publications on Scottish shipwrecks have continually stated that the wreck is broken into two parts but in 1999 the ADU were quickly able to disprove this with a sidescan survey (see Report ADU 99/09). ADU reference to hydrographic records suggests that a lack of original research and plagiarism amongst authors was the origin of this misleading information about the wreck being in two pieces.

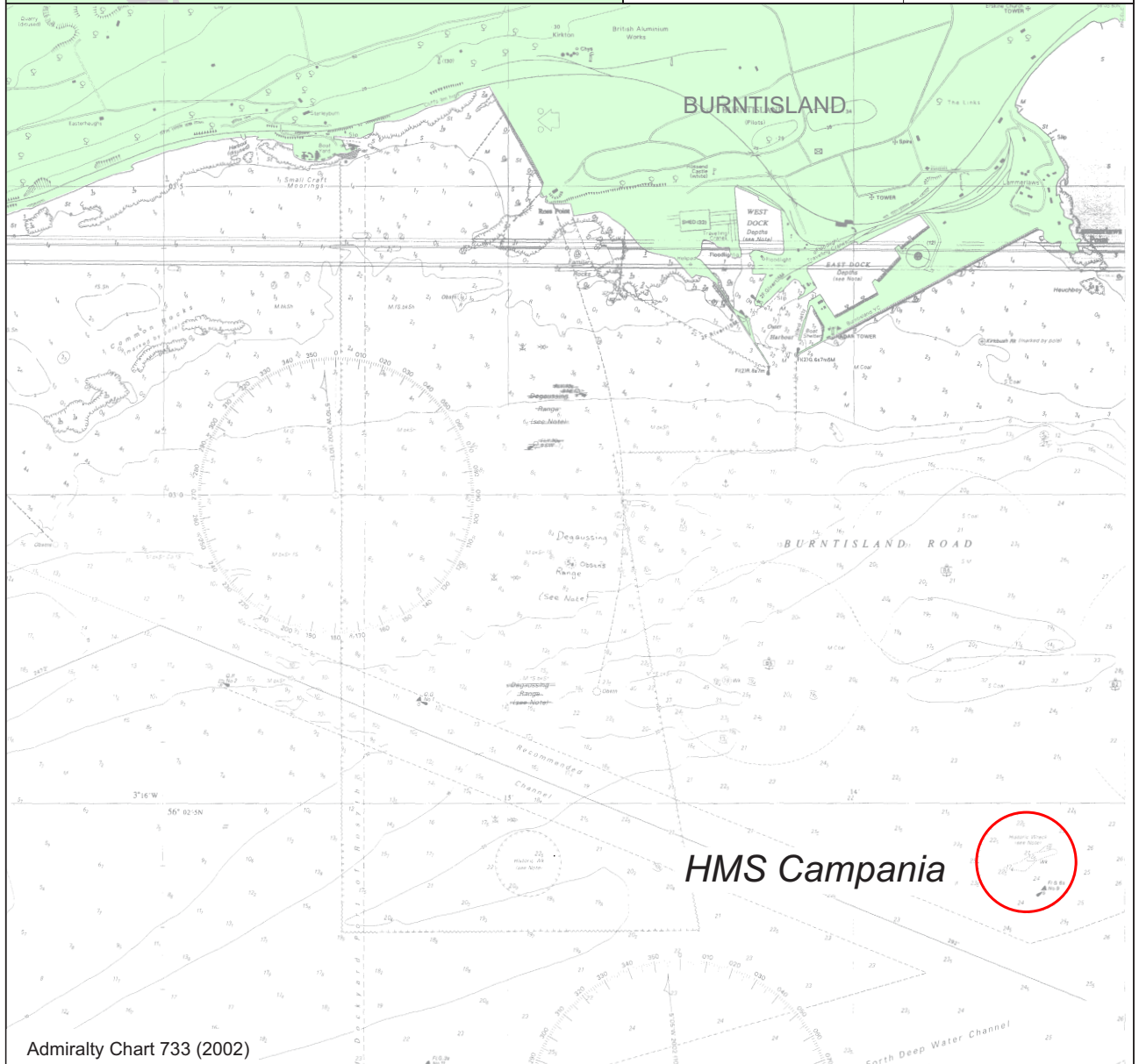
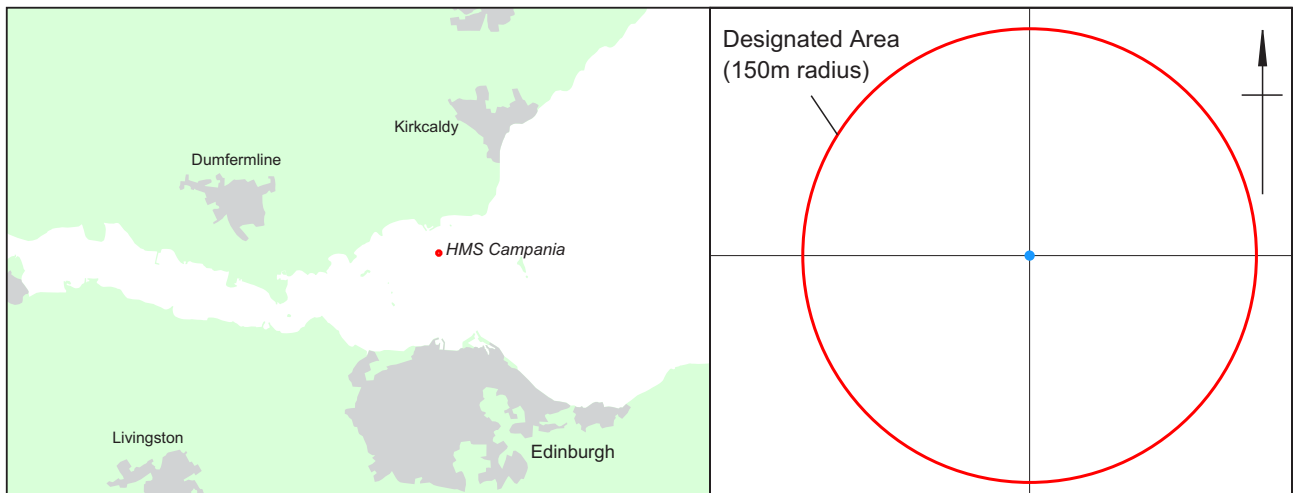
APPENDIX II: SIDESCAN SONAR ANOMALIES

WA ID	Anomaly Type	Easting	Northing	Latitude	Longitude	Length (m)	Height (m)	Width (m)	Description
3001	Object	486118.94	6210806.36	N 56.0422685	W 03.2228111	3.7	0.0	3.5	Object - debris
3002	Linear	485961.40	6210880.34	N 56.0429286	W 03.2253437	31.5	0.0	0.0	Rope or cable
	Linear	485963.64	6210881.22	N 56.0429366	W 03.2253078	31.3	0.0	0.0	
	Linear	485966.30	6210882.19	N 56.0429454	W 03.2252652	31.3	0.0	0.0	
	Linear	485968.97	6210883.69	N 56.0429589	W 03.2252224	31.3	0.0	0.0	
	Linear	485971.29	6210885.05	N 56.0429712	W 03.2251852	31.3	0.0	0.0	
	Linear	485973.88	6210886.90	N 56.0429879	W 03.2251438	31.3	0.0	0.0	
	Linear	485977.13	6210888.54	N 56.0430027	W 03.2250917	31.3	0.0	0.0	
	Linear	485982.48	6210890.98	N 56.0430248	W 03.2250059	31.3	0.0	0.0	
	Linear	485985.98	6210892.75	N 56.0430408	W 03.2249498	31.3	0.0	0.0	
	Linear	485987.54	6210894.28	N 56.0430546	W 03.2249249	31.3	0.0	0.0	
3003	Object with shadow	485919.09	6210941.92	N 56.0434806	W 03.2260261	2.4	0.5	0.8	Object unclear may be geological
3004	Object	485837.65	6210821.73	N 56.0423984	W 03.2273270	2.4	0.0	0.7	Small object - debris
3005	Object	486083.21	6210818.82	N 56.0423794	W 03.2233853	3.9	0.0	3.1	Object - debris
3006	Object	485817.22	6210640.57	N 56.0407701	W 03.2276454	3.4	0.0	0.8	Linear object - debris
3007	Object with shadow	485790.73	6210546.22	N 56.0399216	W 03.2280656	2.8	0.5	0.7	Object dark reflectors
3008	Object	485767.87	6210606.83	N 56.0404655	W 03.2284357	2.1	0.0	0.4	Small linear object
3009	Object	485721.69	6210562.44	N 56.0400652	W 03.2291745	1.0	0.0	1.2	Circular object possibly a tyre
3010	Linear	485611.33	6210520.25	N 56.0396829	W 03.2309436	7.1	0.0	0.0	Rope or cable
	Linear	485609.18	6210520.24	N 56.0396827	W 03.2309781	7.1	0.0	0.0	
	Linear	485607.49	6210519.90	N 56.0396796	W 03.2310052	7.1	0.0	0.0	
	Linear	485604.99	6210517.90	N 56.0396616	W 03.2310452	7.1	0.0	0.0	
3011	Object	485603.01	6210663.46	N 56.0409693	W 03.2310848	3.6	0.0	1.5	Circular bright reflector
3012	Object	485698.90	6210719.21	N 56.0414731	W 03.2295487	1.8	0.0	2.0	Circular bright reflector - mooring point?
3013	Object	486109.43	6210686.44	N 56.0411908	W 03.2229576	1.3	0.0	0.6	Circular object possibly a tyre
3014	Object with shadow	485987.07	6210612.01	N 56.0405185	W 03.2249177	0.9	0.2	0.3	Small object possibly rock but very near wreck site
3015	Object	485746.94	6210472.48	N 56.0392577	W 03.2287645	1.7	0.0	0.8	Linear object - debris

WA ID	Anomaly Type	Easting	Northing	Latitude	Longitude	Length (m)	Height (m)	Width (m)	Description
3016	Object	485741.13	6210479.48	N 56.0393204	W 03.2288581	8.7	0.0	8.7	Thin circular structure / coil of rope
3017	Object	485725.38	6210485.42	N 56.0393733	W 03.2291112	3.3	0.0	0.4	Linear object - debris
3018	Object with shadow	485601.91	6210642.70	N 56.0407828	W 03.2311014	5.3	0.5	0.9	Object - debris
3019	Object with shadow	485702.15	6210687.71	N 56.0411902	W 03.2294948	1.9	0.8	0.6	Object - possibly geological
3020	Object	486173.39	6210688.40	N 56.0412102	W 03.2219311	2.7	0.0	1.1	Small object with scour - possibly rock
3021	Object	486175.91	6210692.31	N 56.0412454	W 03.2218908	1.3	0.0	1.0	Small object with scour - possibly rock
3022	Object	486118.59	6210645.53	N 56.0408235	W 03.2228084	1.4	0.0	1.0	Small object with scour - possibly rock
3023	Object	485792.12	6210536.21	N 56.0398317	W 03.2280427	3.0	0.0	0.7	Linear dark reflector
3024	Object	485742.66	6210465.06	N 56.0391909	W 03.2288328	8.8	0.0	9.1	Circular structure / coil of rope
3025	Object	485727.46	6210470.09	N 56.0392357	W 03.2290770	3.5	0.0	0.3	Linear object
3026	Object with shadow	485717.04	6210537.50	N 56.0398410	W 03.2292478	1.6	0.4	0.8	Circular object - possibly tyre
3027	Object	485870.35	6210652.93	N 56.0408827	W 03.2267932	1.1	0.0	1.1	Circular object
3028	Object	486037.17	6210426.22	N 56.0388506	W 03.2241039	2.5	0.0	1.2	Object / debris
3029	Linear	486066.40	6210480.75	N 56.0393414	W 03.2236376	49.9	0.0	0.0	Rope or cable
	Linear	486061.64	6210480.62	N 56.0393401	W 03.2237139	49.9	0.0	0.0	
	Linear	486056.26	6210480.08	N 56.0393351	W 03.2238003	49.9	0.0	0.0	
	Linear	486053.19	6210480.89	N 56.0393423	W 03.2238496	49.9	0.0	0.0	
	Linear	486045.00	6210479.40	N 56.0393287	W 03.2239810	49.9	0.0	0.0	
	Linear	486035.30	6210476.22	N 56.0392998	W 03.2241365	49.9	0.0	0.0	
	Linear	486027.51	6210474.48	N 56.0392840	W 03.2242614	49.9	0.0	0.0	
	Linear	486022.40	6210472.81	N 56.0392688	W 03.2243433	49.9	0.0	0.0	
	Linear	486020.08	6210471.45	N 56.0392565	W 03.2243805	49.9	0.0	0.0	
3030	Object	486044.67	6210466.22	N 56.0392102	W 03.2239856	5.6	0.0	0.6	Linear object possibly related to mooring/buoy
3031	Object	486044.75	6210464.15	N 56.0391916	W 03.2239842	5.2	0.0	0.4	Linear object possibly related to mooring/buoy
3032	Object	486042.30	6210465.17	N 56.0392007	W 03.2240235	0.7	0.0	0.3	Small dark reflector probably related to mooring system
3033	Object	486039.43	6210460.29	N 56.0391568	W 03.2240694	9.2	0.0	0.4	Base of buoy
3034	Object	486029.49	6210472.27	N 56.0392642	W 03.2242295	8.1	0.0	1.4	Base of mooring/buoy

WA ID	Anomaly Type	Easting	Northing	Latitude	Longitude	Length (m)	Height (m)	Width (m)	Description
3035	Boundary	486109.28	6210618.72	N 56.0405823	W 03.2229565	422.8	0.0	0.0	Main wreck site
	Boundary	486105.36	6210628.77	N 56.0406725	W 03.2230199	422.8	0.0	0.0	
	Boundary	486076.77	6210622.53	N 56.0406156	W 03.2234785	422.8	0.0	0.0	
	Boundary	486041.97	6210609.33	N 56.0404960	W 03.2240363	422.8	0.0	0.0	
	Boundary	486012.39	6210597.56	N 56.0403894	W 03.2245105	422.8	0.0	0.0	
	Boundary	485976.38	6210586.41	N 56.0402881	W 03.2250879	422.8	0.0	0.0	
	Boundary	485948.45	6210567.86	N 56.0401206	W 03.2255352	422.8	0.0	0.0	
	Boundary	485931.62	6210553.13	N 56.0399878	W 03.2258046	422.8	0.0	0.0	
	Boundary	485929.59	6210543.86	N 56.0399045	W 03.2258367	422.8	0.0	0.0	
	Boundary	485944.61	6210537.79	N 56.0398504	W 03.2255953	422.8	0.0	0.0	
	Boundary	485968.58	6210536.93	N 56.0398433	W 03.2252105	422.8	0.0	0.0	
	Boundary	485987.99	6210538.74	N 56.0398602	W 03.2248991	422.8	0.0	0.0	
	Boundary	486010.22	6210540.93	N 56.0398805	W 03.2245424	422.8	0.0	0.0	
	Boundary	486029.13	6210541.66	N 56.0398876	W 03.2242389	422.8	0.0	0.0	
	Boundary	486048.74	6210545.73	N 56.0399247	W 03.2239244	422.8	0.0	0.0	
	Boundary	486072.30	6210573.17	N 56.0401720	W 03.2235477	422.8	0.0	0.0	
Boundary	486100.67	6210592.94	N 56.0403504	W 03.2230933	422.8	0.0	0.0		
Boundary	486112.60	6210604.42	N 56.0404539	W 03.2229024	422.8	0.0	0.0		

1. Eastings and Northings are given in metres for UTM Zone 30 North, datum WGS84.
2. Latitude and Longitude are given in degrees and decimal minutes, datum WGS84.
3. The dimensions of the sidescan sonar anomalies are calculated by Coda Geosurvey software using the velocity of the survey vessel and the time between the two points of interest. Therefore these measurements are a guide only. Timing update rates and errors from the GPS signal or unrecorded changes in velocity will affect these dimensions.

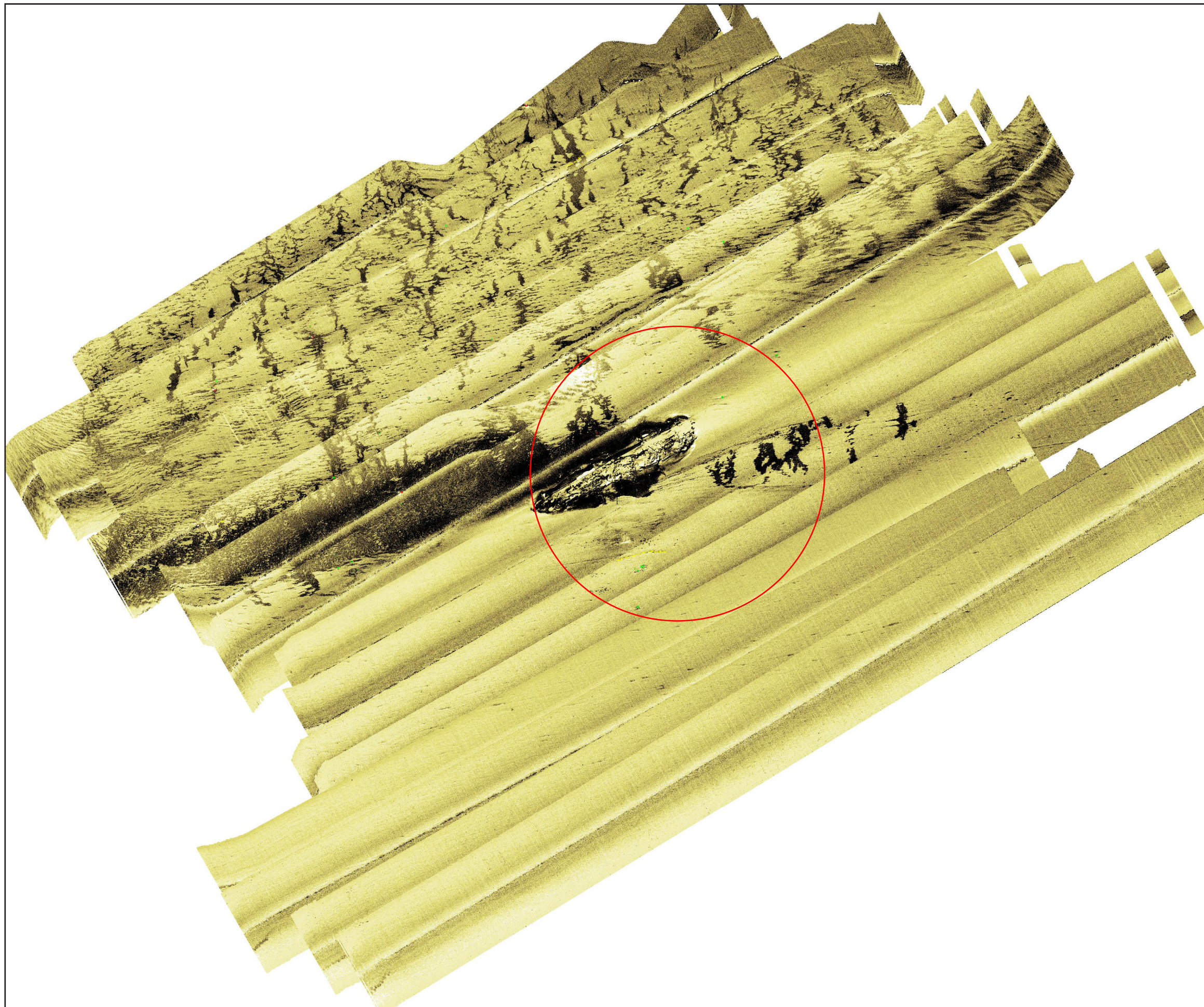
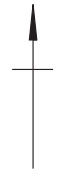


Admiralty Chart 733 (2002)

<ul style="list-style-type: none"> Centre of Designated Area 56°02.408 N 03°13.412 W (WGS. 84) 	<p>This product has been derived, in part, from Crown Copyright Material with the permission of the UK Hydrographic Office and the Controller of Her Majesty's Stationary Office (www.ukho.gov.uk) All rights reserved. (Wessex Archaeology Licence Number 820/020220/11) NOT TO BE USED FOR NAVIGATION WARNING: The UK Hydrographic Office has not verified the information within this product and does not accept liability for the accuracy of reproduction or any modifications made thereafter.</p>			
	Date:	14/06/05	Revision Number:	0
	Scale:	1:200,000 & (inset) 1:5000	Illustrator:	KJB
	Path:	W:\53111\Drawing Office\Report figures\2004\HMS Campania\Full Report\Figure 1.dwg		

HMS Campania site location

Figure 1



 Designated Area

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Revision Number:	0
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Date:	14/06/05
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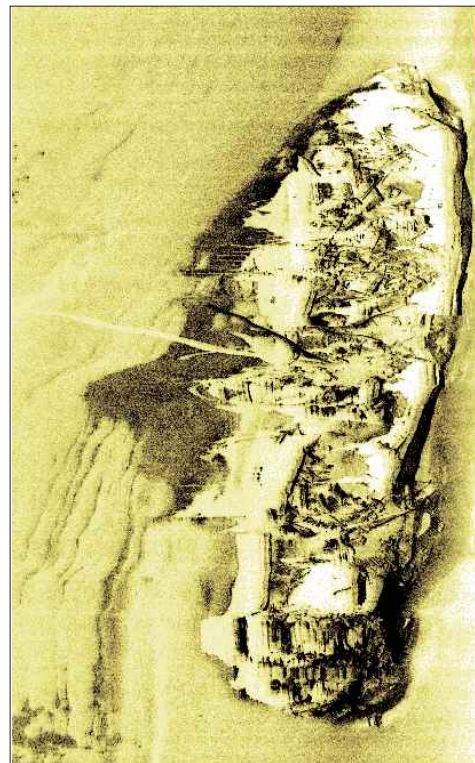
HMS Campania Image 1



HMS Campania Image 2



HMS Campania Image 3



HMS Campania Image 4

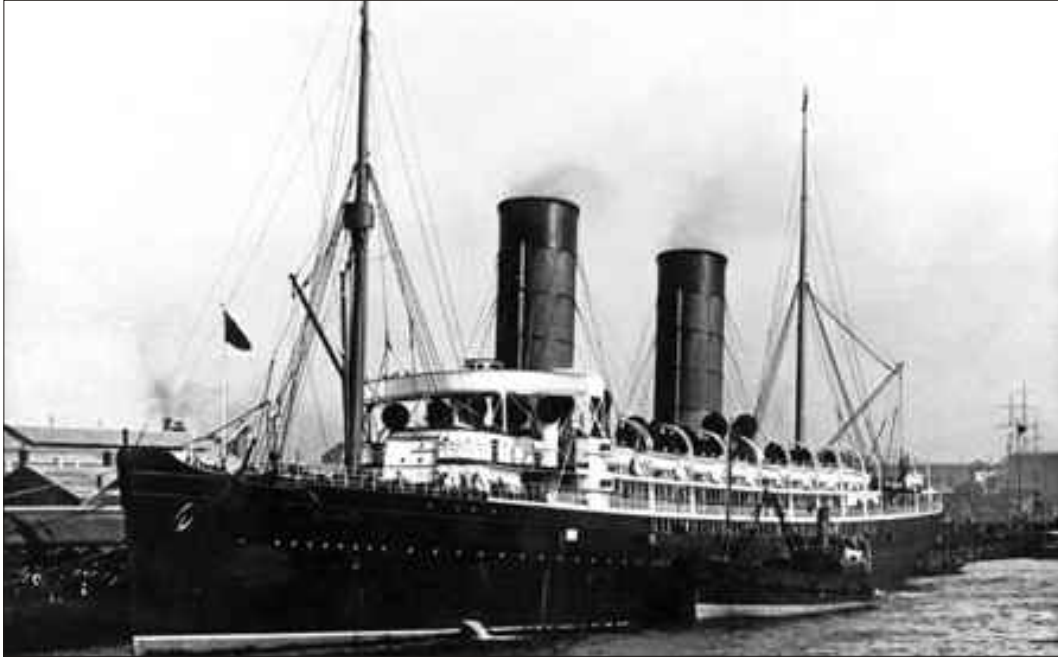


Plate 1. *HMS Campania* before being rebuilt as an aircraft carrier in 1914



Plate 2. *HMS Campania* sinking following a collision in 1918

Plate 1: © Ian Rhodes www.rhodesfamily.org.uk
Plate 2: Cigarette card from www.greatships.net



Date: 14/06/05

Illustrator: KJB

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