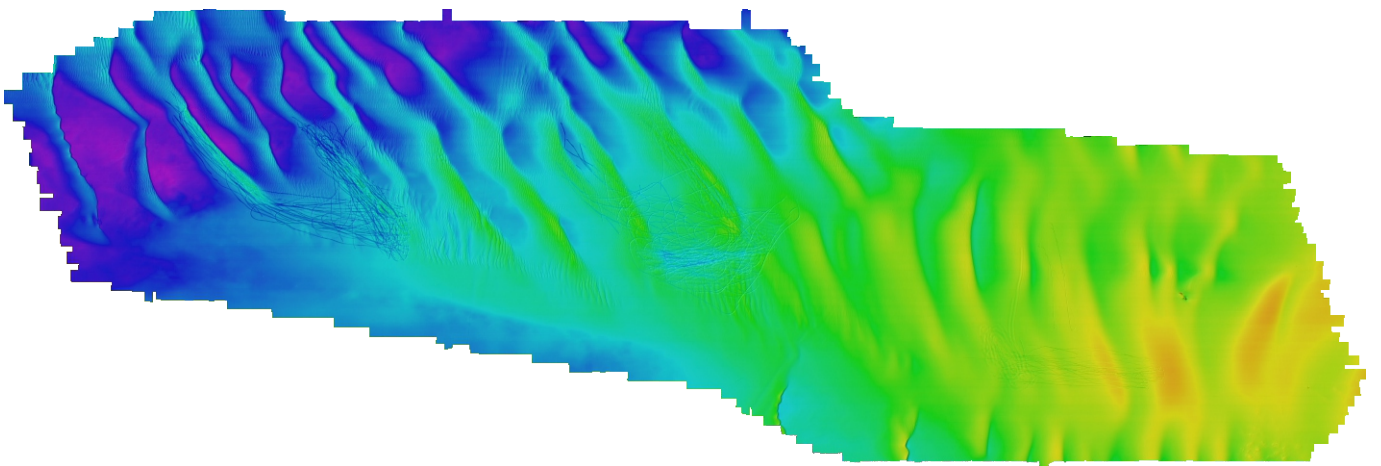




making sense of heritage

# Aggregate Area 457

Archaeological Review of Geophysical Data



Ref: 111200.01  
January 2016



## **Aggregate Area 457**

### **Archaeological Review of Geophysical Data**

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# Aggregate Area 457

## Archaeological Review of Geophysical Data

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## Aggregate Area 457

### Archaeological Review of Geophysical Data

#### Summary

Wessex Archaeology (WA) was commissioned by Marine Ecological Surveys Ltd, on behalf of Westminster Gravels Ltd, to undertake an archaeological review of geophysical survey data as part of the heritage impact monitoring process implemented for aggregate extraction Area 457. The data consisted of sidescan sonar and multibeam bathymetry acquired in 2015 by Bibby HydroMap Ltd.

The principal aim of this report is to provide an archaeological monitoring review of known archaeological sites and to assess the area for any anomalies of potential archaeological interest within the Survey Area.

This review has identified 25 sites of potential archaeological interest within the Survey Area. Of these, two have been classified as A1 - Anthropogenic origin of archaeological interest, and have been interpreted as wreck sites. Anomaly **7017** has been identified as a wreck measuring 82.5m x 35.3m x 4.8m in the sidescan sonar and multibeam bathymetry data and is located at the UKHO recorded position of the *Stanleigh*, a British steam ship sunk in 1941. It is recommended that the existing 100m Archaeological Exclusion Zone around the limits of the wreck is maintained.

Anomaly **7023** has also been interpreted as a wreck; measuring 16.9m x 13.8m x 2.6m, at the UKHO recorded position of an unidentified wreck. This position is located some 725m southeast of the licenced Aggregate Area and therefore no Archaeological Exclusion Zone is recommended at this time.

Two sites (**7002** and **7008**) have been classified as A3 - Historic record of possible archaeological interest with no corresponding geophysical anomaly. No exclusion zones have been recommended at this time.

A further 21 anomalies have been classified as A2 - Uncertain origin of possible archaeological interest, of which 15 are located within the Aggregate Area. It is recommended by WA that an avoidance strategy be adhered to with respect to these anomalies within the Aggregate Area, where possible, with particular attention paid to debris (**7015** and **7016**) located 218m and 186m north west of the wreck of the *Stanleigh* respectively; and anomaly **7009** which has been classified as a seafloor disturbance.

Six of these A2 anomalies (**7013**, **7018**, **7019**, **7021**, **7022** and **7024**) are located outside of the licenced Aggregate Area.

It is recommended that any artefacts recovered during dredging activities continue to be reported using the established Marine Aggregate Industry *Protocol for Reporting Finds of Archaeological Interest* (BMAPA and English Heritage 2005).



## Aggregate Area 457

### Archaeological Review of Geophysical Data

#### Acknowledgements

This assessment was commissioned by Marine Ecological Surveys and Rob Goodchild is thanked. The data were provided by Bibby HydroMap Limited, and their assistance is acknowledged in this respect.

Laura Andrews carried out the review and compiled the report, with quality control provided by Dr Louise Tizzard. Kenneth Lymer prepared the illustrations and the project was managed for Wessex Archaeology by Dr Louise Tizzard.



# Aggregate Area 457

## Archaeological Review of Geophysical Data

### 1 INTRODUCTION

#### 1.1 Project Background

- 1.1.1 Wessex Archaeology (WA) was commissioned by Marine Ecological Surveys Ltd, on behalf of Westminster Gravels Ltd, to undertake an archaeological review of geophysical survey data as part of ongoing monitoring of aggregate extraction Area 457. This work was undertaken as part of the aggregate licence conditions associated with the dredging area; located in Liverpool Bay, 30 km north-west of Liverpool, Merseyside.
- 1.1.2 The Survey Area comprises the southern portion of the aggregate licence area covering the active dredging area and a buffer (**Figure 1**). The Survey Area is delimited by the following co-ordinates (WGS84 UTM30N) (**Figure 1**):

UTM 30 Easting	UTM 30 Northing
458622	5939340
458038	5940841
459496	5941527
461087	5941131
462949	5941297
464270	5941303
464958	5940500
466066	5940499
468469	5940253
469130	5938321
468579	5937723
465124	5937773
463807	5938468

**Table 1: Delimiting co-ordinates of the Survey Area**

- 1.1.3 The assessment consists of a review of sidescan sonar and multibeam bathymetry data acquired by Bibby HydroMap Limited in 2015.
- 1.1.4 As part of the Marine Licence Conditions for Area 457, geophysical monitoring surveys are reviewed in order to identify any changes to the archaeological baseline. This report details the most recent archaeological investigations using geophysical survey data acquired by Bibby HydroMap Limited in 2015 (Bibby HydroMap 2015a, 2015b).



1.1.5 A UKHO data search was also undertaken for this assessment.

## 1.2 Previous Work

1.2.1 Marine Aggregate Licence Area 457 has been dredged since 2010 and this assessment represents the five year archaeological review addressing the maritime cultural heritage of Licence Area 457.

1.2.2 No finds have currently been reported through the Marine Aggregate Industry *Protocol for Reporting Finds of Archaeological Interest* within Licence Area 457.

## 1.3 Aims

1.3.1 The aim of this study is to provide the licensees with an archaeological review of the effects of dredging on known archaeological sites. The report also aims to identify any new sites of potential archaeological interest that may have been previously buried and subsequently exposed from dredging works and associated activities. The observation of previously unidentified sites of archaeological interest may also be due higher quality geophysical data.

## 2 METHODOLOGY

### 2.1 Data Sources

2.1.1 The geophysical data assessed for this report were acquired and provided by Bibby HydroMap Limited; the survey was undertaken during August 2015 on board the survey vessel *MV Bibby Tethra*.

2.1.2 The geophysical survey data comprised sidescan sonar and multibeam bathymetry datasets. Each of these were assessed for their quality and rated using the following WA criteria.

Data Quality	Description
Good	Data which are clear and unaffected by weather conditions or sea state. The dataset is suitable for the interpretation of standing and partially buried metal wrecks and their character and associated debris field. These data also provide the highest chance of identifying wooden wrecks and debris.
Average	Data which are affected by weather conditions and sea state to a slight or moderate degree. The dataset is suitable for the identification and partial interpretation of standing and partially buried metal wrecks, and the larger elements of their debris fields. Wooden wrecks may be visible in the data, but their identification as such is likely to be difficult.
Variable	This category contains datasets with the quality of individual lines ranging from good to average to below average. The dataset is suitable for the identification of standing and some partially buried metal wrecks. Detailed interpretation of the wrecks and debris field may be problematic. Wooden wrecks are unlikely to be identified.

**Table 2: Criteria for assigning data quality rating**

2.1.3 The sidescan sonar data have been rated as 'Good' using the above criteria table, although a very small number of files displayed a minimal amount of noise interference. Overall the data quality was found to be of a high standard for archaeological assessment. The positioning of the data was found to be good with the addition of corrected navigation files that were provided to WA, however there were some positioning errors which were rectified during data processing.





2.1.4 The multibeam bathymetry data have been rated as 'Good' using the above criteria. The data quality and resolution of 0.5m was found to be of a high standard and suitable for the archaeological assessment of seabed objects and debris.

2.1.5 For this survey all positions were recorded and expressed in WGS 1984, UTM Zone 30N.

## **2.2 Geophysical Data – Technical Specifications**

2.2.1 The geophysical data were acquired by Bibby HydroMap Limited on board the survey vessel MV *Bibby Tethra* between 1st and 4th August 2015.

2.2.2 The sidescan sonar deployed for the survey was an Edgetech 4200 dual frequency sidescan sonar towfish operating at high (400 kHz) and low (100 kHz) frequencies with a 100 m range. The sidescan sonar data were digitally logged and provided to WA as .cod files.

2.2.3 Corrected navigation was acquired for the sidescan sonar data and provided to WA as .txt files.

2.2.4 A USBL system was used on board to track the position of the sidescan sonar towfish.

2.2.5 Multibeam bathymetry data were acquired using a Reson Seabat 7125 system, operating at high (400 kHz) frequency. The bathymetry data were digitally logged and provided to WA as four tidally-reduced, gridded, XYZ .pts files. Data were gridded at 0.5m.

## **2.3 Geophysical Data – Processing**

2.3.1 The high frequency .cod sidescan sonar data files were processed 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 interpreted for any objects of possible anthropogenic origin. This involves creating a database of anomalies within Coda by tagging individual features of possible archaeological potential, recording their positions and dimensions, and acquiring an image of each anomaly for future reference.

2.3.2 A mosaic of the sidescan sonar data is produced during this process to assess the quality of the sonar towfish positioning. The corrected navigation files provided are applied at this stage. This process allows the position of anomalies to be checked between different survey lines and for the positioning to be further refined if necessary.

2.3.3 The form, size and/or extent of an anomaly is a guide to its potential to be an anthropogenic feature and therefore of archaeological interest. A single small but prominent anomaly 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.

2.3.4 The multibeam bathymetry data were analysed to identify any unusual seabed structures that could be shipwrecks or other anthropogenic debris. The data were gridded at 0.5m and analysed using Fledermaus software, which enables a 3-D visualisation of the acquired data and geo-picking of seabed anomalies.

## **2.4 Geophysical Data – Anomaly Grouping and Discrimination**

2.4.1 The previous section describes the initial interpretation of all available geophysical datasets which were conducted independently of one another. This inevitably leads to the

possibility of any one object being the cause of numerous anomalies in different datasets and apparently overstating the number of archaeological features in the Survey Area.

2.4.2 To address this fact the anomalies were grouped together; allowing one ID number to be assigned to a single object for which there may be, for example, a UKHO record and multiple sidescan sonar anomalies.

2.4.3 Once all the geophysical anomalies and desk-based information have been grouped, a discrimination flag is added to the record in order to discriminate against those which are not thought to be of an archaeological concern. These flags are ascribed as follows:

Non-Archaeological	U1	Not of anthropogenic origin
	U2	Known non-archaeological feature
	U3	Non-archaeological hazard
Archaeological	A1	Anthropogenic origin of archaeological interest
	A2	Uncertain origin of possible archaeological interest
	A3	Historic record of possible archaeological interest with no corresponding geophysical anomaly

**Table 3: Criteria discriminating relevance of seabed feature to proposed scheme**

2.4.4 All the archaeological sites that have been identified within the Survey Area are presented in **Appendix I** and discussed below.

2.4.5 The grouping and discrimination of information at this stage is based on all available information and is not definitive. It allows for all features of potential archaeological interest to be highlighted, while retaining all the information produced during the course of the geophysical interpretation and desk-based assessment for further evaluation should more information become available.

### 3 RESULTS

3.1.1 The results of this assessment are collated in gazetteer format and detailed in **Appendix I**. Below is a summary of the number and types of features identified in the Survey Area for Area 457. The anomalies have then been divided into their classifications and described accordingly.

3.1.2 The archaeological review of geophysical data identified a total of 130 anomalies within the sidescan sonar data and 23 anomalies within the multibeam bathymetry data. In addition, seven UKHO positions were identified within the Aggregate Licence Area and Survey Area. Following the grouping and discrimination procedure outlines above, these were grouped to produce a list of 25 sites of potential archaeological interest within the Survey Area (**Figure 2**), which were characterised as follows:

Archaeological Discrimination	Quantity	Interpretation
A1	2	Anthropogenic origin of archaeological interest
A2	21	Uncertain origin of possible archaeological interest
A3	2	Historic record of possible archaeological interest with no corresponding geophysical anomaly
<b>Total</b>	<b>25</b>	

**Table 4: Sites of archaeological potential within the Survey Area**

3.1.3 Furthermore, these can be classified by probable type, which can further aid in assigning archaeological potential and importance.



Anomaly Classification	A1 Discrimination	A2 Discrimination	A3 Discrimination	Total
Wreck	2			2
Debris Field		2		2
Debris		3		3
Seafloor Disturbance		2		2
Rope/chain		1		1
Dark Reflector		13		13
Recorded Wreck/ Obstruction			2	2
<b>Total</b>	<b>2</b>	<b>21</b>	<b>2</b>	<b>25</b>

**Table 5: Types of site identified**

- 3.1.4 From this dataset, two anomalies (**7017** and **7023**) have been classified as A1 – Anthropogenic origin of archaeological interest.
- 3.1.5 Anomaly **7017** (**Figure 3**) has been interpreted as an upright wreck measuring 85m x 33.1m x 6m, located at approximately 21m LAT depth of water, orientated north west – south east and partially embedded in sediment. It has been identified at the UKHO recorded position of the British steam ship *Stanleigh* (UKHO 7963), which sank on 11<sup>th</sup> March 1941, after being bombed by German aircraft and limping to Liverpool Bay. The original dimensions of the vessel have been recorded as 79.1m x 11.6m x 5.4m. The wreck appears relatively intact towards the bow at the south east end, with a width of 13.1m; however the stern appears to have broken away from the main structure with significant surrounding debris to the north east of the vessel, measuring 33.1m in width. This damage would account for the variation between the original and observed dimensions. Some structure is visible on the wreck in both the multibeam bathymetry and the sidescan sonar data. The surrounding sediment and large height shadow observed in the data could obscure the identification of any further features surrounding the main structure. This anomaly is located in the south east of the Aggregate Area.
- 3.1.6 Anomaly **7023** (**Figure 4**) has been interpreted as a possible wreck site measuring 18.8m x 13.8m x 2.6m, located at approximately 20.5m LAT depth of water, orientated north west – south east. It is located at the recorded position of an unidentified wreck (UKHO 8184). This anomaly has been observed in the datasets as a distinct cone shaped array comprising two straight edges and several thick straight objects of narrowing lengths approximately 1m in width and 0.5m in height with the apex at south east end. Situated at the apex is a large object measuring 5.3m x 3.4m x 2.5m. A second large object has been observed in the sidescan sonar data at the north west end, measuring 5.3m x 3.5m x 0.4m. This anomaly is located approximately 725m south east of Aggregate Area boundary.
- 3.1.7 Two sites (**7002** and **7008**) have been classified as A3 – Historic record of possible archaeological interest with no corresponding geophysical anomaly.
- 3.1.8 Both are UKHO recorded positions of fisherman’s fasteners (**7978** and **7967** respectively) and both are located within the aggregate licence area. The position for **7002** is located within an area of the seabed that has already undergone dredging and therefore any object relating to this record is likely to have been damaged, moved or recovered. The position for **7008** is located on the crest of a sand wave formation. The fastener was recorded by the UKHO in 1970 and then in 1988 was classified as a sandwave. Any potential object associated with this record is no longer observed on the seabed, but shallow burial cannot be discounted..



- 3.1.9 The remaining 21 anomalies have been classified as A2 – Uncertain origin of possible archaeological interest. Unless otherwise stated each of these anomalies has been identified in both the sidescan sonar and multibeam bathymetry data.
- 3.1.10 Two of these anomalies (**7016** and **7022**) have been interpreted as debris fields; classified as an area of dark and bright reflectors. Anomaly **7016** (**Figure 5**) has been identified as a group of three objects in an almost line, orientated north north east – south south west in an area measuring 23.3m x 8.6m. The object to the north is a sub-rectangular bright reflector measuring 8m x 4.2m. This object could comprise absorbent material such as wood or synthetics. The central object is a large curved dark reflector with a flared shadow measuring 7.4m x 2.3m x 0.4m and the object to the south is a large angular object with a small shadow measuring 5.8m x 1.6m x 0.4m. There are some possible smaller objects within this area. This debris field is located within the Aggregate Area, approximately 186m north west of the wreck of the *Stanleigh* (**7017**) and could possibly be associated debris although this cannot be determine without further investigation.
- 3.1.11 Debris field **7022** has been identified as a distinct group of small dark reflectors, which appear to be in a sub-rounded formation, measuring 19.6m x 13.8m. Each object measures approximately 3m x 1m x 0.4m. This debris field is located approximately 454m south east of the Aggregate Area boundary.
- 3.1.12 Three anomalies have been interpreted as isolated pieces of debris (**7006**, **7015** and **7021**) with the latter two being located slightly apart from the two debris fields described above. Anomaly **7006** has been identified as a large object, measuring 6.5m x 3.9m x 0.5m with a slight scour and a small linear extending to the west measuring 15m x 0.3m x 0.1m. It is possible that this might be an anchor or similar object, with the linear being possible rope or chain.
- 3.1.13 Anomaly **7015** has been identified as a large dark reflector or possibly two very close together, measuring 8.7m x 5.2m x 0.2m. It is located approximately 36m east of **7016** and 218m north east of the wreck of the *Stanleigh*.
- 3.1.14 Anomaly **7021** has been identified as a distinct dark reflector measuring 3.1m x 0.8m x 0.4m, interpreted as debris due to its similarity in size and form to those in debris field **7022**, located approximately 36m to the east, and 431m south east of Aggregate Area boundary.
- 3.1.15 Two of the anomalies (**7009** and **7019**) have been interpreted as a seafloor disturbance; classified as an anomalous area of dark and bright reflectors. They have not been identified as debris due to the lack of coherent structure, size and form.
- 3.1.16 Anomaly **7009** (**Figure 5**) has been identified as a small collection of dark reflectors, measuring 14m x 9.7m with a maximum height of 0.3m. There is a larger angular object measuring 7.3m x 0.7m x 0.1m to the south east of the group. This anomaly is located within the Aggregate Area.
- 3.1.17 Anomaly **7019** has been identified as a large irregular area of small dark reflectors measuring 37.5m x 22.1m. Each dark reflector measures approximately 2m x 0.4m x 0.3m. This anomaly is located approximately 211m south east of Aggregate Area boundary.
- 3.1.18 One of the anomalies identified has been classified as a possible rope/chain (**7000**), measuring 42m x 0.9m x 0.2m and located in the west of the Aggregate Area. It has been observed in the sidescan sonar as a small object, or two short linear objects close together, measuring 3.5m x 0.4m x 0.2m on the crest of a sand wave and extending along

the crests of the sand waves to the east, possibly partially buried. This anomaly was not observed in the multibeam bathymetry data. The remaining thirteen anomalies (**7001**, **7003**, **7004**, **7005**, **7007**, **7010**, **7011**, **7012**, **7013**, **7014**, **7018**, **7020** and **7024**) have been classified as a dark reflector; object of uncertain origin of possible archaeological interest.

- 3.1.19 Of these, only anomaly **7007** was not observed in the multibeam bathymetry data.
- 3.1.20 Three of these remaining anomalies (**7013**, **7018** and **7024**) have been located outside of the Aggregate Area with positions of 176m south, 262m south east and 764m south east of the Aggregate Area respectively.
- 3.1.21 These anomalies range in size from **7020** with measurements of 1.8m x 1.6m x 0.5m to anomaly **7004** with measurements of 10.6m x 7.9m x 0.5m.
- 3.1.22 It is noted that anomalies **7018**, **7019**, **7021**, **7022**, **7023** and **7024** are situated within a historic dredge spoil dump site (pers. comm. M. Irvine). As such, these anomalies may be associated with historic displacement activity and may not be *in situ*.

#### 4 MITIGATION

- 4.1.1 With regards to mitigation of archaeology, the marine planning authority, working with the relevant regulator and advisors, takes account of the desirability of sustaining and enhancing the significance of heritage assets and adopts a general presumption in favour of the conservation of designated heritage assets within an appropriate setting (HM Government 2011; DCALG 2012).
- 4.1.2 Anomaly **7017** has been identified as the wreck of the *Stanleigh*. It is recommended that the existing 100m Archaeological Exclusion Zone around the extents of the wreck site is maintained (**Figure 2**).
- 4.1.3 Anomaly **7023** is located outside of the Licence Area and will not be impacted. As such no Archaeological Exclusion Zone is recommended at this time.
- 4.1.4 Two UKHO records have been identified in the Survey Area (**7002** and **7008**). Due to the nature of the records and that no geophysical anomalies have been identified at these locations, no Archaeological Exclusion Zones are recommended.
- 4.1.5 Within the Aggregate Area, 15 sites have been classified as A2 – Uncertain origin of archaeological interest. Although no Archaeological Exclusion Zones are recommended at this time, it is recommended that an avoidance strategy is implemented where possible with respect to these anomalies. In particular the positions of the debris field **7016** and individual piece of debris **7015**, which are located 186m and 218m respectively from the wreck of the *Stanleigh*, should be noted. Also, anomaly **7009** which has been interpreted as a seafloor disturbance (**Figure 5**). Based on the bathymetry data none of these anomalies are situated in current dredging areas.
- 4.1.6 It is recommended that if any objects of possible archaeological interest are recovered during dredging operations from Area 457, that they should continue to be reported using the established Marine Aggregate Industry *Protocol For Reporting Finds of Archaeological Interest* (BMAPA and English Heritage 2005).



## 5 REFERENCES

BMAPA and English Heritage 2005. Protocol for Reporting Finds of Archaeological Interest. Prepared by Wessex Archaeology.

Bibby HydroMap Limited 2015a. Area 457 Mobilisation Report. Unpublished report reference no. Rep-F-019-2.

Bibby HydroMap Limited 2015b. Area 457 Operations and Results Report. Unpublished Report reference number Rep-F-015.

Department for Communities and Local Government, 2012, National Planning Policy Framework, March 2012 Available online (accessed on 05/02/2014):  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/6077/2116950.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf)

HM Government, 2011, Marine Policy Statement, March 2011, Available online (accessed on 13/01/2015):  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69322/pb3654-marine-policy-statement-110316.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69322/pb3654-marine-policy-statement-110316.pdf)





## APPENDIX I – SEABED FEATURES OF ARCHAEOLOGICAL POTENTIAL

WA ID	Classification	Archaeological Potential	Easting	Northing	Length (m)	Width (m)	Height (m)	Description	Aggregate Area	External References
7000	Rope/chain	A2	459284	5940772	42	0.9	0.2	Small object, or possibly two small linear objects close together, measuring 3.5m x 0.4m x 0.2m on top of a sand wave, with a long tail across other sand waves. Not observed in the bathymetry data	Inside Aggregate Area	
7001	Dark Reflector	A2	460194	5941352	6.9	3	0.7	Large irregular angular object with no dark edge, possibly two together, with corresponding large angular bright shadow. Seen in bathy as a rounded object measuring 6m x 5m x 0.3m in slight scour measuring 29m x 21m x 0.35m. Possibly natural.	Inside Aggregate Area	
7002	Recorded Wreck/Obstruction	A3	461384	5941150	-	-	-	Foul Ground - fisherman's fastener. Not observed in either dataset but could be obscured by sand wave	Inside Aggregate Area	7978
7003	Dark Reflector	A2	461463	5939723	4.3	2.3	0.3	Small angular object with a slight scour and sliver of shadow. Seen as possible depression or a mound with scour in the bathymetry data.	Inside Aggregate Area	
7004	Dark Reflector	A2	461509	5939224	10.6	7.9	0.5	Disturbed area of dark and bright reflectors with a small angular edge and a sharp angled bright reflector with large dark angled edge. A further angular bright shadow with no obvious cause which may suggest buried objects. Irregular mound seen in the bathymetry data with a slight	Inside Aggregate Area	



WA ID	Classification	Archaeological Potential	Easting	Northing	Length (m)	Width (m)	Height (m)	Description	Aggregate Area	External References
								scour. Measures 11m x 8m x 0.4m in this data.		
7005	Dark Reflector	A2	461957	5939221	3.8	1	0.2	Small round object with a dark edge and scour. Bright shadow corresponds that. Seen as a small depression 4mx 4mx1m with slight sediment build up on the edge in the multibeam bathymetry.	Inside Aggregate Area	
7006	Debris	A2	462446	5938915	21.5	3.9	0.5	Object measuring 6.5m x 3.9m x 0.5m with a slight scour with a small linear attached measuring 15m x 0.3m x 0.1m. Seen as a mound with a slight scour measuring 7m x 6m x 0.3m in the bathymetry data.	Inside Aggregate Area	
7007	Dark Reflector	A2	462509	5939094	3.4	0.3	0.2	Small dark irregular object with some small shadow.	Inside Aggregate Area	
7008	Recorded Wreck/ Obstruction	A3	463027	5939869	-	-	-	Foul Ground - fisherman's fastener. Not observed in data and is in the middle of an already dredged area.	Inside Aggregate Area	7967
7009	Seafloor Disturbance	A2	463280	5939078	14	9.7	0.3	Bent looking object measuring 7.3m x 0.7m x 0.1m with a small slight shadow with a scour in a small distinct group of dark reflectors with bright shadow of measuring 11.9m x 9.7m and 0.3m in height. Seen as a small irregular mound next to slight depression measuring 14m x 10m x 0.2m in the bathymetry data.	Inside Aggregate Area	
7010	Dark Reflector	A2	463580	5938799	9.4	2.3	0.2	Irregular object with irregular shadow in a clear area of the	Inside Aggregate	





WA ID	Classification	Archaeological Potential	Easting	Northing	Length (m)	Width (m)	Height (m)	Description	Aggregate Area	External References
								seabed. Small irregular object measuring 15m x 12m x 0.3m in the bathymetry data.	Area	
7011	Dark Reflector	A2	465145	5939708	2.1	1.9	0.4	Small object with a dark edge and bright reflector. Seen in the multibeam as an anomalous feature with no discernible depth.	Inside Aggregate Area	
7012	Dark Reflector	A2	465655	5938747	5.1	0.8	0.2	Small dark object with bright shadow and a slight scour. Small depression in the bathy data. Position taken from bathymetry data	Inside Aggregate Area	
7013	Dark Reflector	A2	466677	5938068	3.7	2	0.9	Square object with tapered bright shadow. Just distinguishable in bathy data.	Outside Aggregate Area	
7014	Dark Reflector	A2	467276	5939677	2.7	1.9	0.4	Small object with a dark edge, bright shadow and a scour to one side. Seen as a mound in bathy data measuring 6m x 6m x 0.2m.	Inside Aggregate Area	
7015	Debris	A2	467559	5939183	8.7	5.2	0.2	Two small dark reflectors with sliver of shadow measuring 5.1m x 1.8m x 0.2m in SSS. .Seen as possible two depressions or mounds in a depression in the bathymetry data, measuring 8.7m x 5.2m x 0.1m. 36m from 7016 and approx. 218m from wreck 7017.	Inside Aggregate Area	
7016	Debris Field	A2	467594	5939192	23.3	8.6	0.4	Group of three objects in an almost line oriented NNE - SSW. A large concave angled object with sliver of bright shadow measuring 5.8m x 1.6m x 0.4m, central large curved dark reflector with large flared shadow	Inside Aggregate Area	



WA ID	Classification	Archaeological Potential	Easting	Northing	Length (m)	Width (m)	Height (m)	Description	Aggregate Area	External References
								measuring 7.4m x 2.3m x 0.4m and a further sub-rectangular of bright reflector measuring 8m x 4.2m with no shadow. Possibly absorbent material e.g. wooden; synthetic. Possible smaller untagged surrounding objects. Seen in the multibeam data. Situated 186m from wreck 7017. 36m from 7015.		
7017	Wreck	A1	467773	5939132	85	33.1	6	Irregular area of dark reflectors, One large measuring 34.8m x 33.1m x 1.5m and one smaller oval, tapering towards larger area measuring 43.1m x 6.9m x 4.8m. Attaches the two areas. Possibly a wreck. Shadow could obscure further features within debris field. No clear structure apparent. Associated with UKHO record 7963, British steam ship <i>Stanleigh</i> , recorded as bows SE and inverted. Sunk 03/11/1941. Original dimensions 79.1m x 11.6 x 5.4. Last seen in 2001 as 83.4m x 12.5m x 7.1m. Orientated 140 degrees. Identified in the bathy as wreck which looks broken in half with a surrounding large debris field. Position taken from central location in this dataset. Seen as 85m x 31m x 6m in the bathymetry data. Width of structure 13.1m. Looks like vessel with bow in SE and stern in NW	Inside Aggregate Area	7963

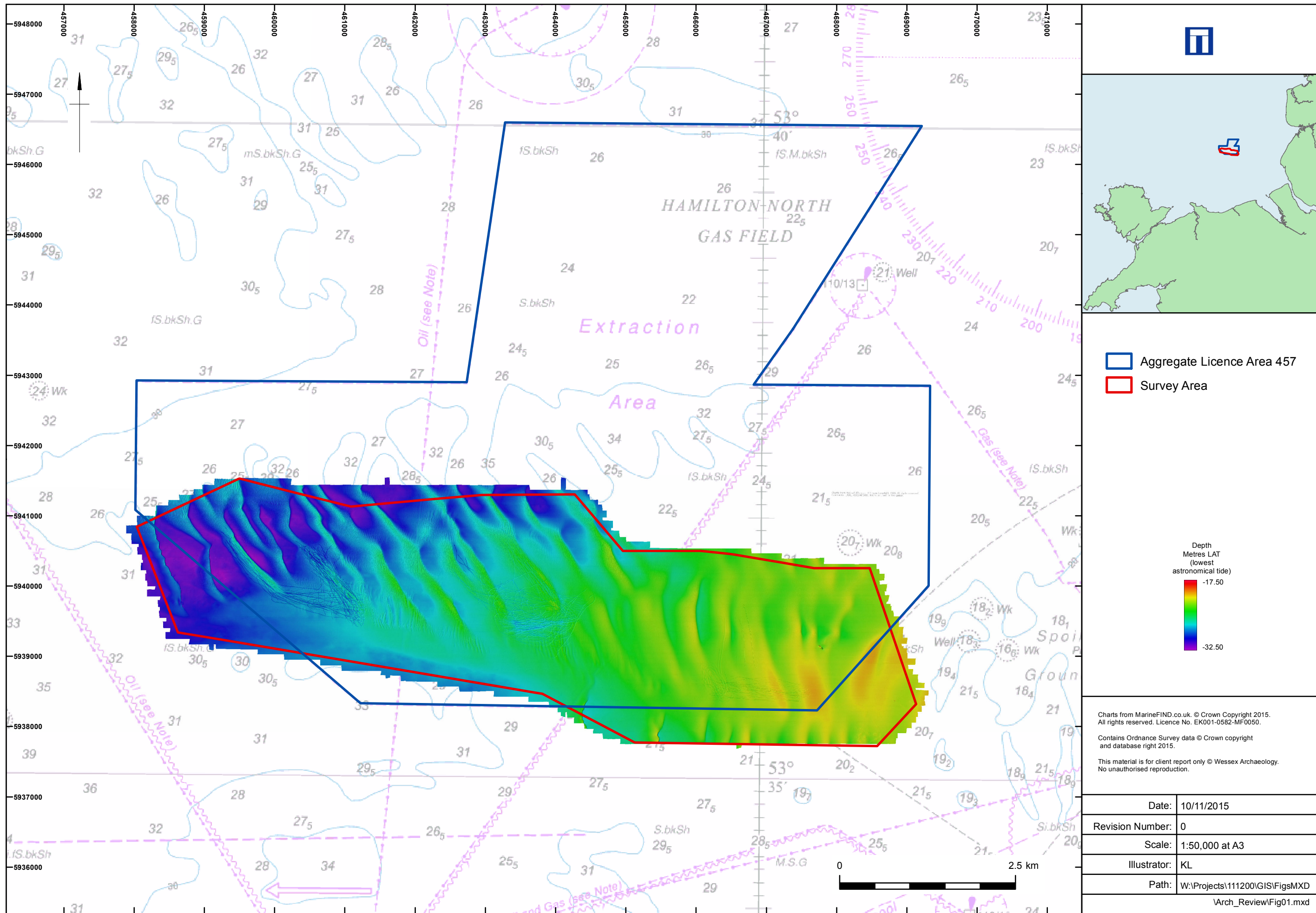


WA ID	Classification	Archaeological Potential	Easting	Northing	Length (m)	Width (m)	Height (m)	Description	Aggregate Area	External References
								and some structure visible. Looks partially buried in sediment. Stern looks broken away at a slight angle with some surrounding debris.		
7018	Dark Reflector	A2	468215	5938385	5.6	3.1	0.3	Irregular object, dark edge and bright shadow visible. Seen as a small mound in the bathymetry data 4m x 4m x 0.1m. Position taken from bathymetry data	Outside Aggregate Area	
7019	Seafloor Disturbance	A2	468490	5938770	37.5	22.1	0.3	Irregular area of dark and bright reflectors with a shadow. Some look hollow or several close together. All approx. 2m x 0.4m x 0.3m.	Outside Aggregate Area	
7020	Dark Reflector	A2	468724	5939376	1.8	1.6	0.5	Small object in a rounded patch of scour with some height. If in a depression could be taller. Has a dark square edge but brighter rounded inside, thought could be start of shadow. Seen as an object within slight scour 3.5m x 3m x 0.2m. Could be natural.	Inside Aggregate Area	
7021	Debris	A2	468674	5938646	3.1	0.8	0.4	Small object with a slight scour and some corresponding shadow in the sidescan sonar. Also observed in the bathy data. 35m from 6041.	Outside Aggregate Area	
7022	Debris Field	A2	468709	5938649	19.6	13.8	0	Irregular but distinct rounded group of small dark reflectors approximately 3m x 1m x 0.4m. A similar lone object further apart. Also observed in the bathymetry data.	Outside Aggregate Area	
7023	Wreck	A1	468821	5938366	18.8	13.8	2.6	Irregular but distinct area of debris	Outside	8184



WA ID	Classification	Archaeological Potential	Easting	Northing	Length (m)	Width (m)	Height (m)	Description	Aggregate Area	External References
								orientated NW to SE. One large angular object measuring 5.3m x 3.4m x 2.5m at SE end. An array of dark reflectors with possible segmentations. This measures 11.6m x 2m x 0.8m. Each segments measures approximately 2m x 1m x 0.5m. Second square object at opposite NW end measuring 5.3m x 3.5m x 0.4m. Could be a wreck. Seen as a large object at the apex (SW) of a cone shaped frame with small straight objects with "ribs". Very distinct. Some sediment build-up to the east. Measured approximately as 19m in length, 14m at widest point. 6.5m at width of large mound. Highest point 1.8m in bathy.	Aggregate Area	
7024	Dark Reflector	A2	468945	5938445	2.3	0.8	0.4	Small angular object with flare of bright shadow; looks anomalous to the surrounding reflectors on the seabed.	Outside Aggregate Area	

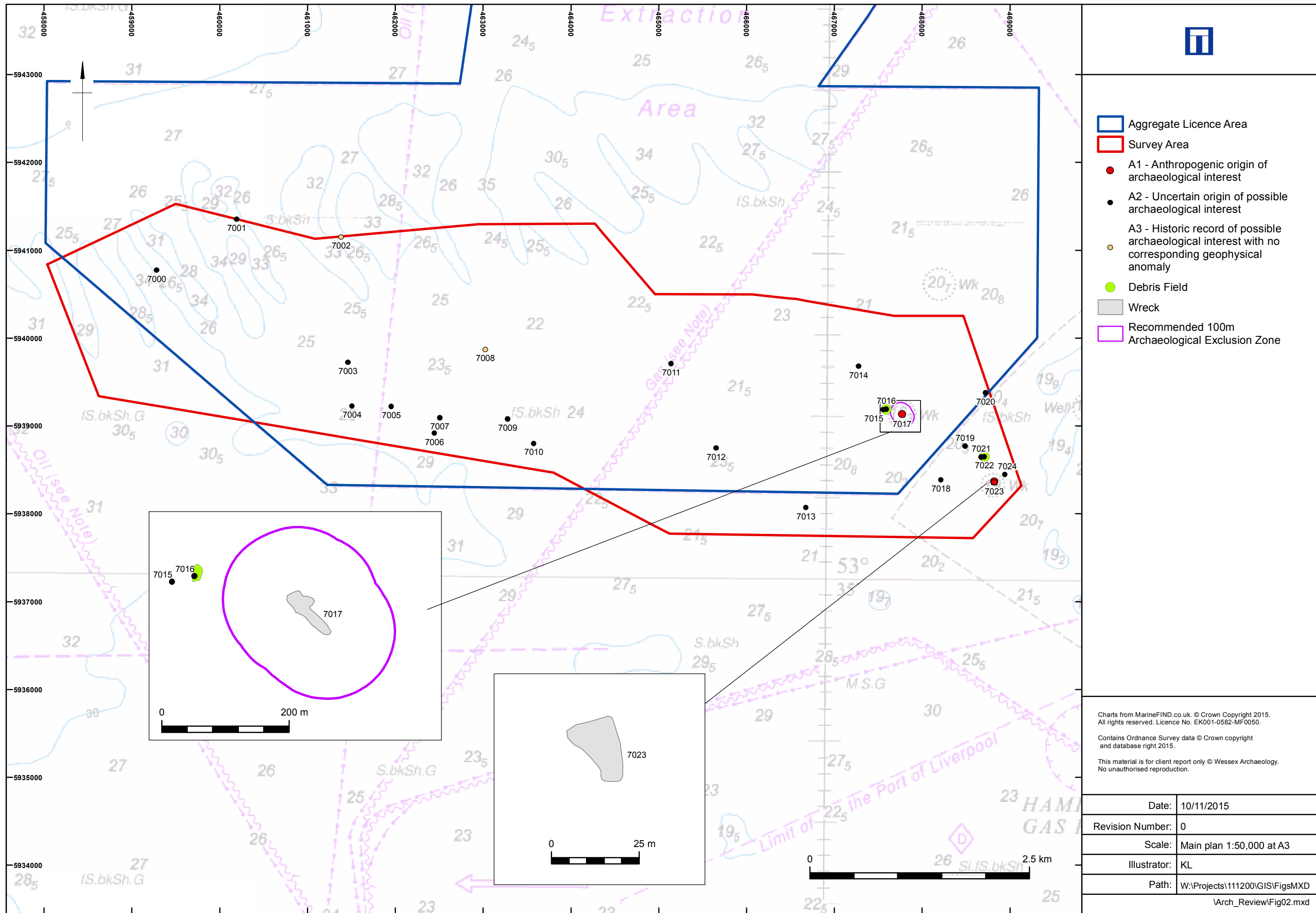
1. Co-ordinates are in WGS84 UTM31N
2. Positional accuracy estimated  $\pm 10$ m



Aggregate Licence Area 457 and Survey Area

Figure 1





- Aggregate Licence Area
- Survey Area
- A1 - Anthropogenic origin of archaeological interest
- A2 - Uncertain origin of possible archaeological interest
- A3 - Historic record of possible archaeological interest with no corresponding geophysical anomaly
- Debris Field
- Wreck
- Recommended 100m Archaeological Exclusion Zone

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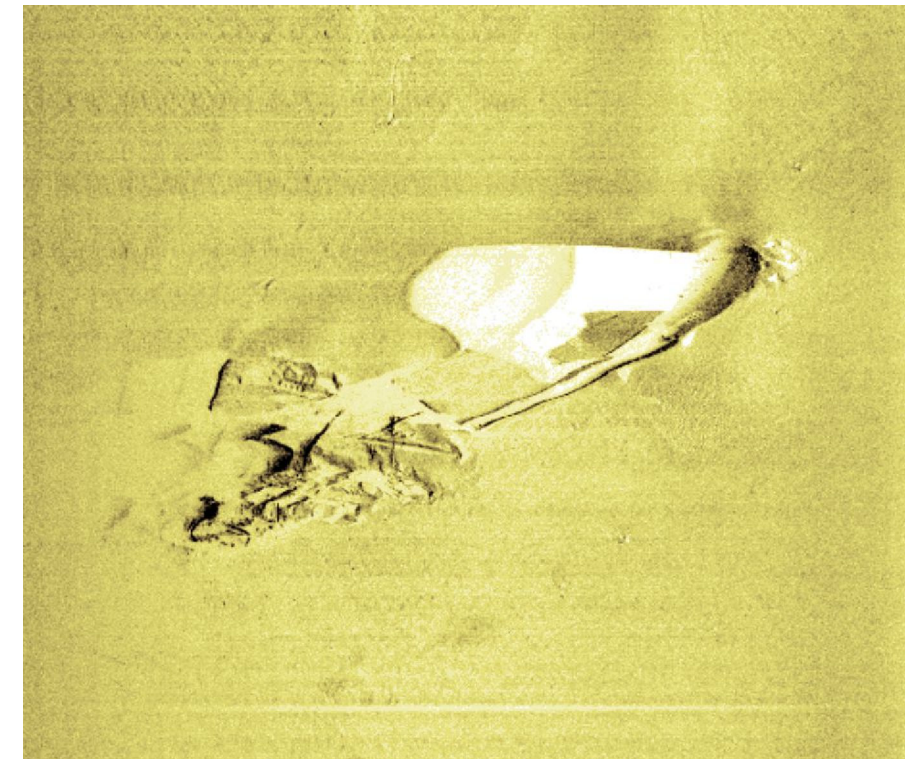
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Geophysical Anomalies and Recommended Archaeological Exclusion Zone

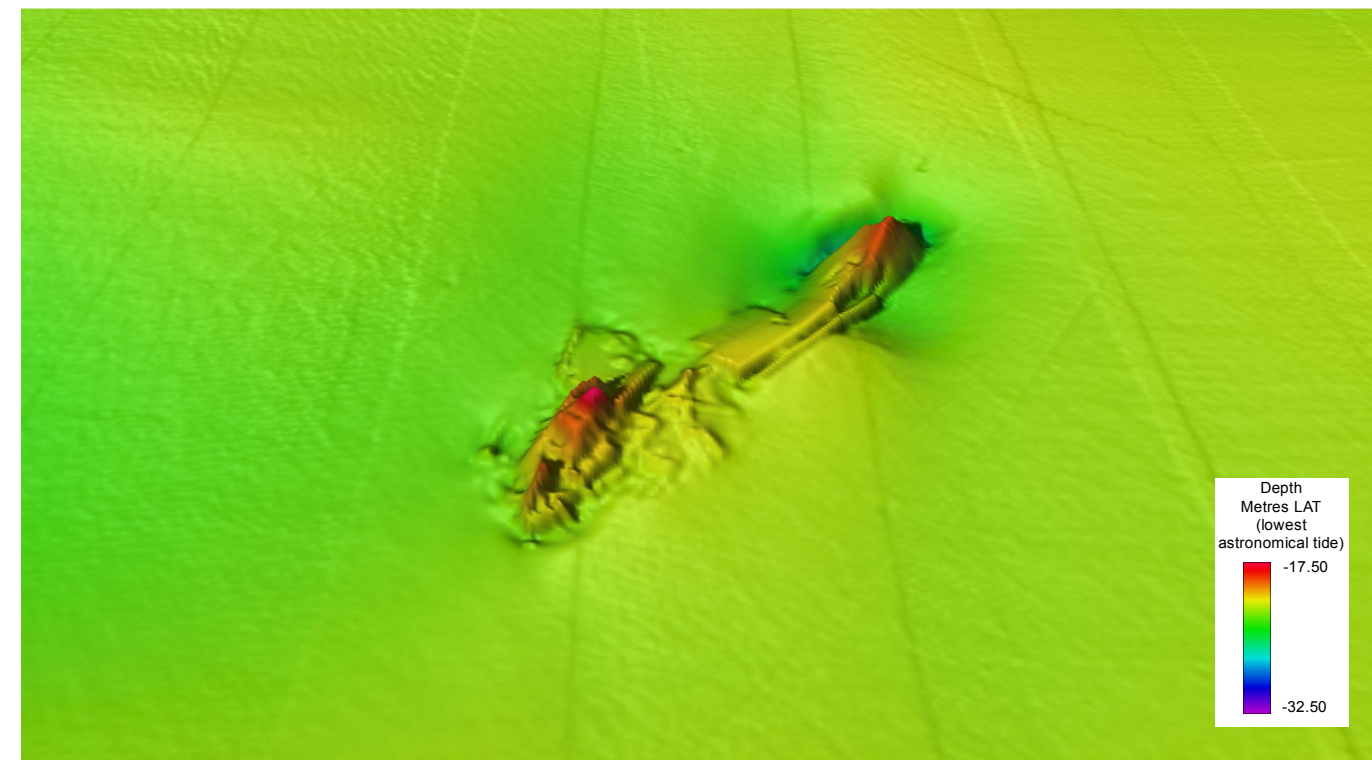
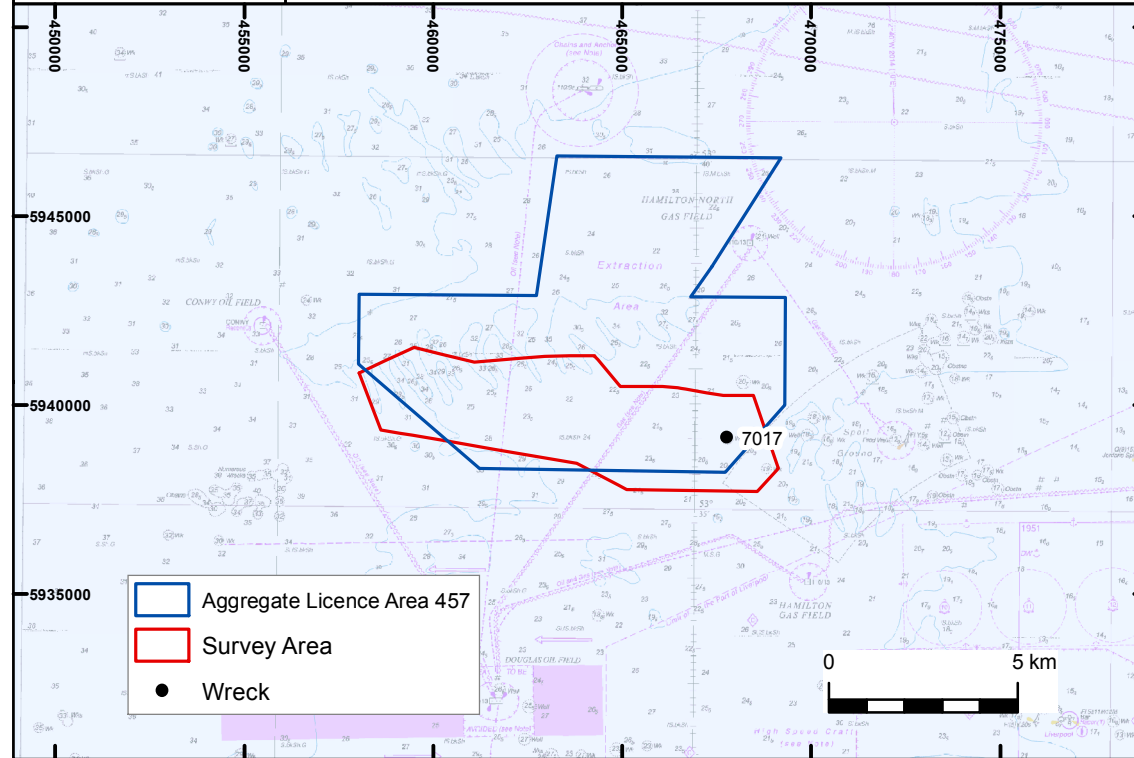
Figure 2

WA 7017 – Stanleigh (UKHO 7963)

<b>Location</b>		467773 E, 5939132 N (UTM30N)
<b>Archaeological Importance</b>		High
<b>Geophysical Survey Dimensions and Notes</b>		<p>Dimensions: 85m x 33.1m x 6m</p> <p>Observed as an irregular and indistinct large outline of dark and bright reflectors in the sidescan sonar data, interpreted as a wreck; one large oval measuring 34.8m x 33.1m x 1.5m and one smaller oval, tapering towards larger area measuring 43.1m x 6.9m x 4.8m, which appears attached.</p> <p>The wreck is more clearly defined in the multibeam bathymetry with more coherent structure than is apparent from the sidescan sonar. The wreck lies orientated NW–SE with the bows in the southeast. Appears relatively intact at this end, with a width of 13.1m. However, wreck appears broken up in midships with a large amount of debris visible immediately surrounding the main structure.</p>
<b>Build</b>	<b>Type</b>	British Steam ship
	<b>Construction</b>	Built 1912. Two boilers. Triple expansion engine
	<b>Dimensions</b>	79.1m x 11.6 x 5.4m
	<b>Shipyard</b>	Seebeck, Westermunde, Germany; owned at time of loss by Stanhope SS Co Ltd.
<b>Loss</b>	<b>Cause</b>	Lost 11th March 1941; bombed by German aircraft and limped to Liverpool Bay where it sank
<b>Extents of Survival</b>		<p>Recorded as the wreck of the British steam ship <i>Stanleigh</i>.</p> <p>Distinct outline of a wreck site, exhibiting significant height. Appears relatively intact with some surrounding sediment build-up that falls away in the southeast. However, has broken up significantly in the midships with stern lying slightly offset. Clear debris field immediately surrounding the wreck, comprising structure and debris. Site appears to be partially buried in sediment which could obstruct further objects being identified.</p>



A sidescan sonar waterfall image of anomaly 7017, facing east, 85m x 33.1m x 6m



Gridded multibeam bathymetry image of anomaly 7017, facing east, 1x vertical exaggeration



Drawing projection: WGS84 UTM z30N

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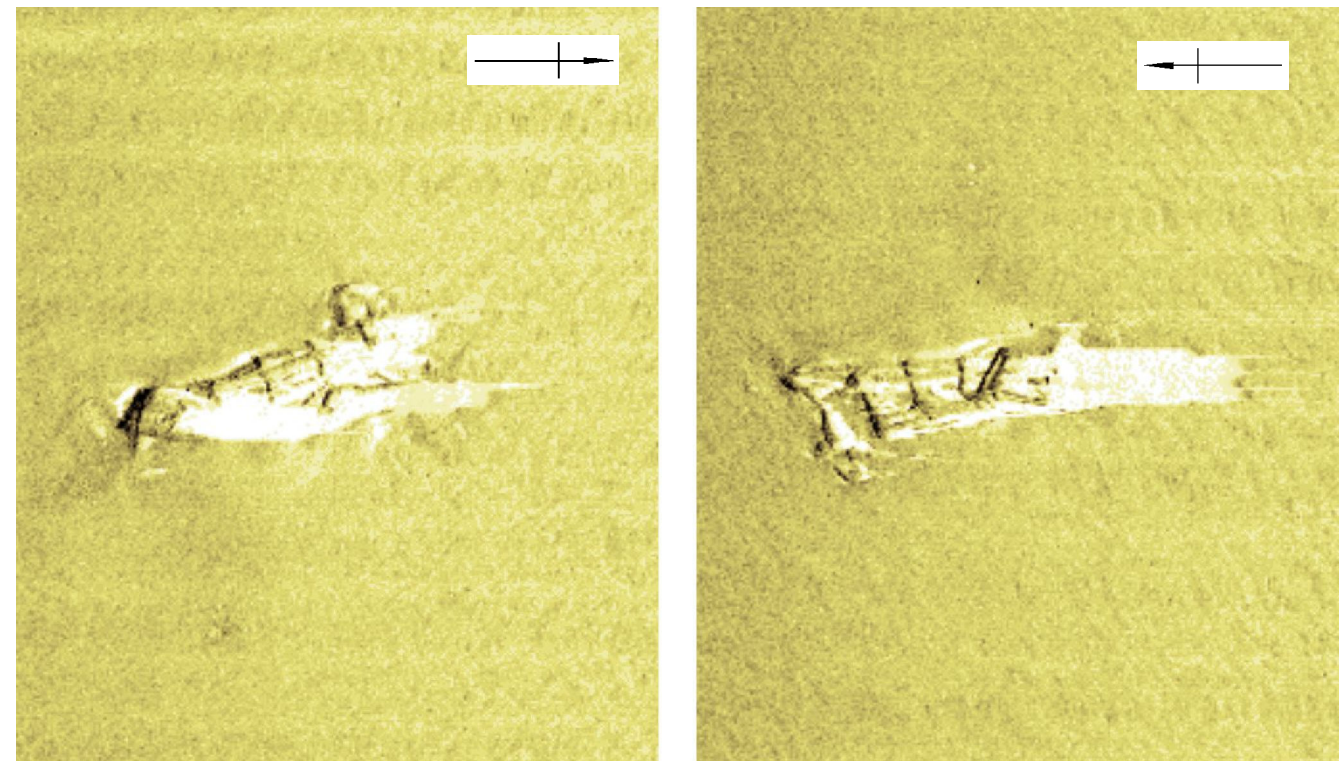
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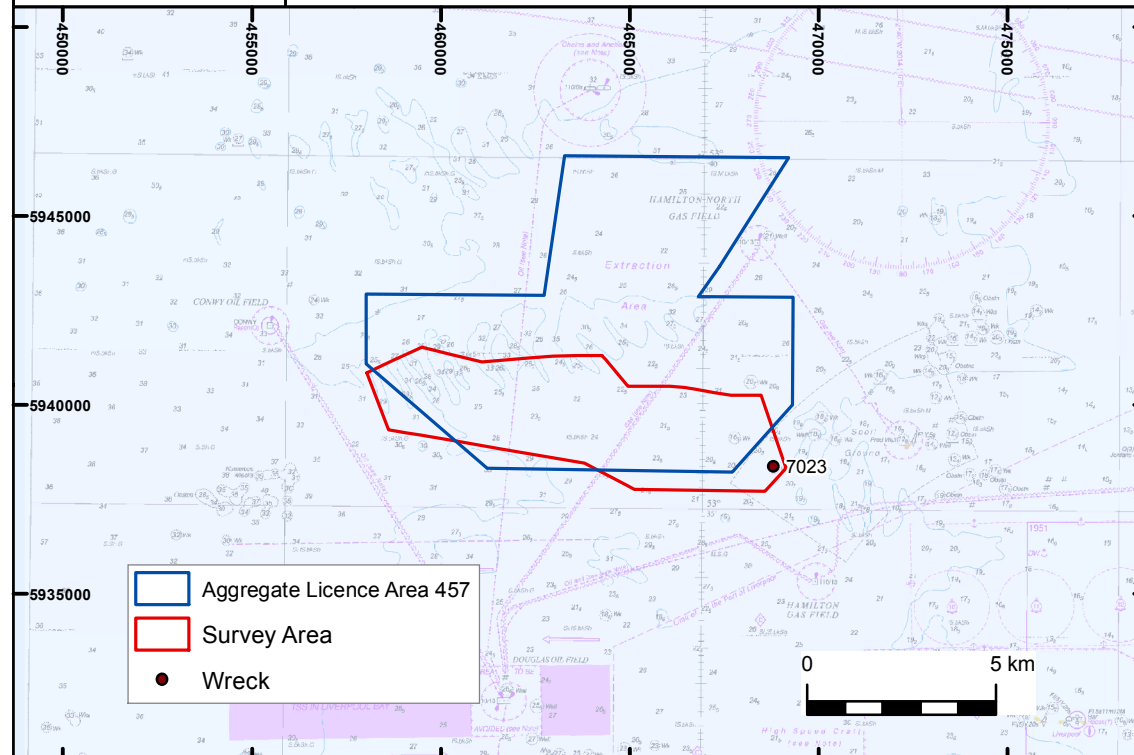


## WA 7023 – Unidentified Wreck (UKHO 8184)

<b>Location</b>		468821 E, 5938366 N (UTM30N)
<b>Archaeological Importance</b>		High
<b>Geophysical Survey Dimensions and Notes</b>		<p>Dimensions: 18.8m x 13.8m x 2.6m</p> <p>Distinct area of large dark and bright reflectors visible in the sidescan sonar data and multibeam bathymetry data at a NW–SE orientation. This anomaly has been interpreted as a wreck. Observed as a tapering array of straight objects, framed by two long straight objects approximately 11m in length and 14m at widest point and 6.5m at narrower end. A large angular object is visible at the apex in the south measuring 5.3m x 3.4m x 2.5m. A second large object is also visible at the north west end.</p>
<b>Build</b>	<b>Type</b>	Unknown
	<b>Construction</b>	Unknown
	<b>Dimensions</b>	Unknown
	<b>Shipyard</b>	Unknown
<b>Loss</b>	<b>Cause</b>	Unknown
<b>Extents of Survival</b>		As this interpreted wreck has not been previously unidentified it is difficult to ascertain the extent of survival, however this is believed to be part of a broken wreck structure, which could be surrounded by buried features.



Sidescan sonar waterfall images of anomaly 7023; 18.8m x 13.8m x 2.6m



Gridded multibeam bathymetry image of anomaly 7023, facing west, 1x vertical exaggeration



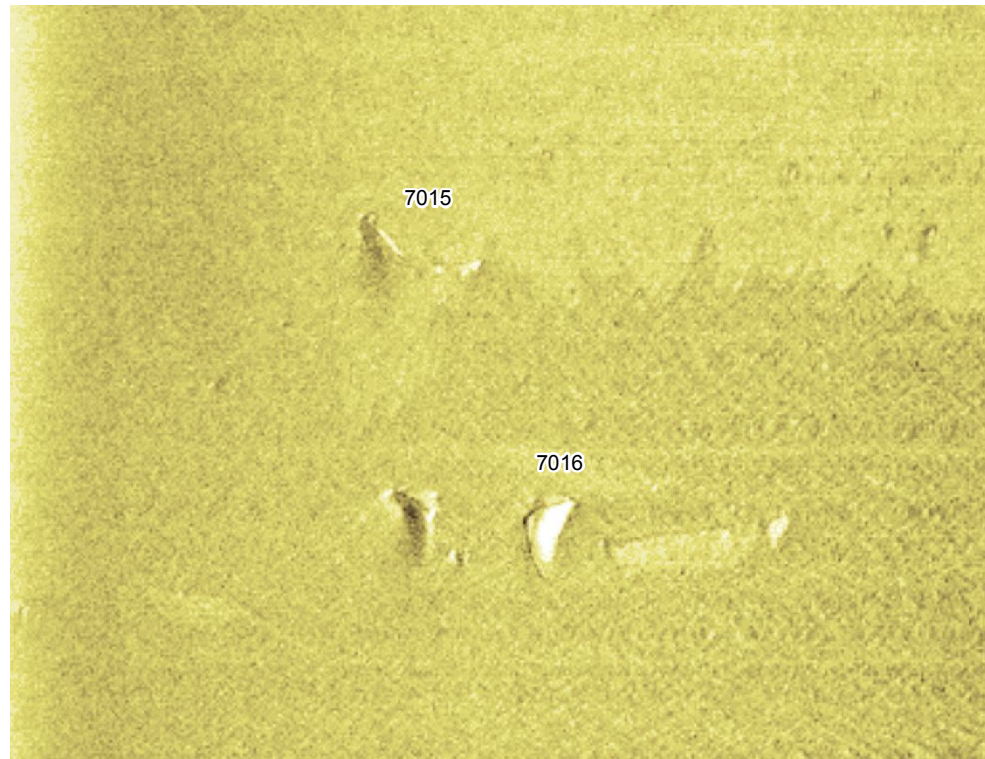
Drawing projection: WGS84 UTM z30N

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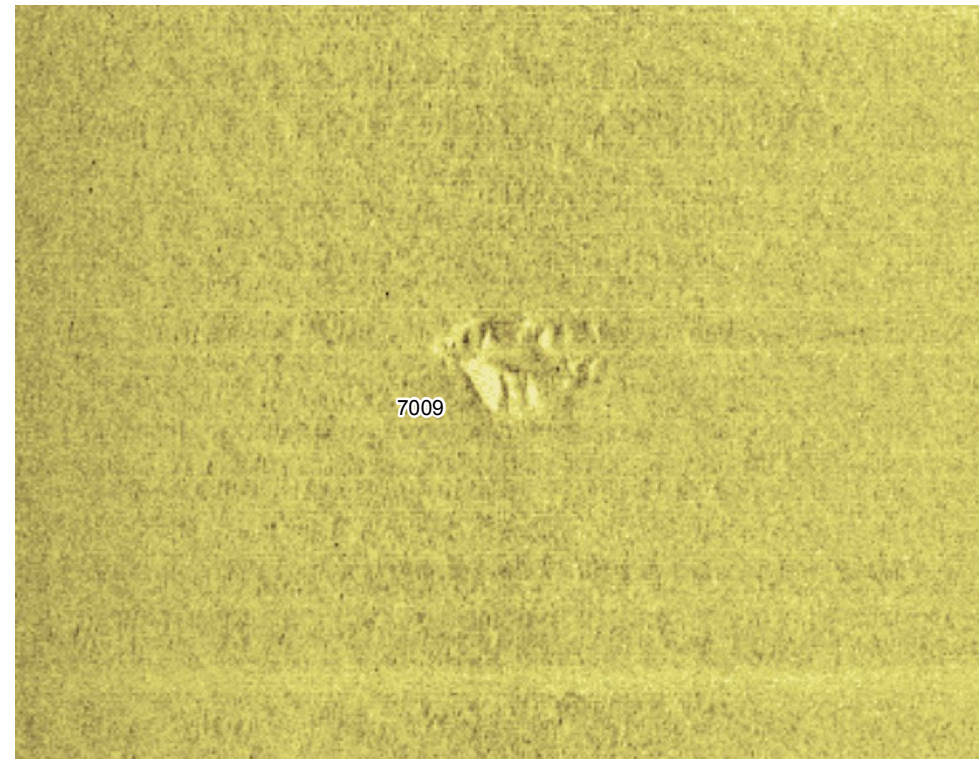
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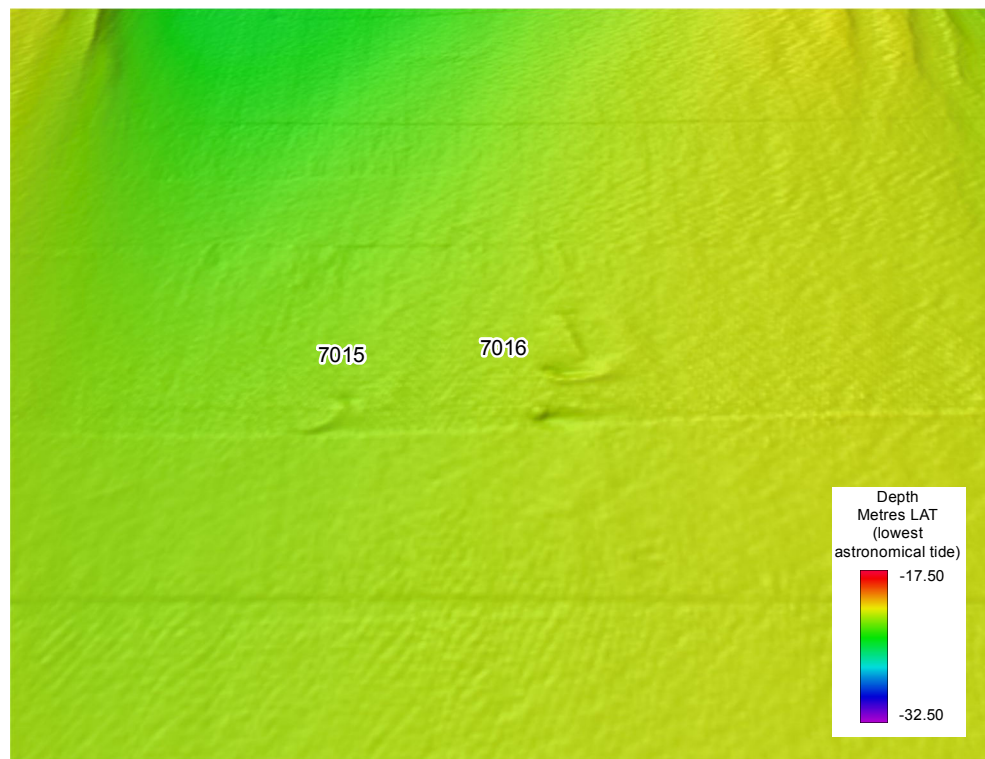




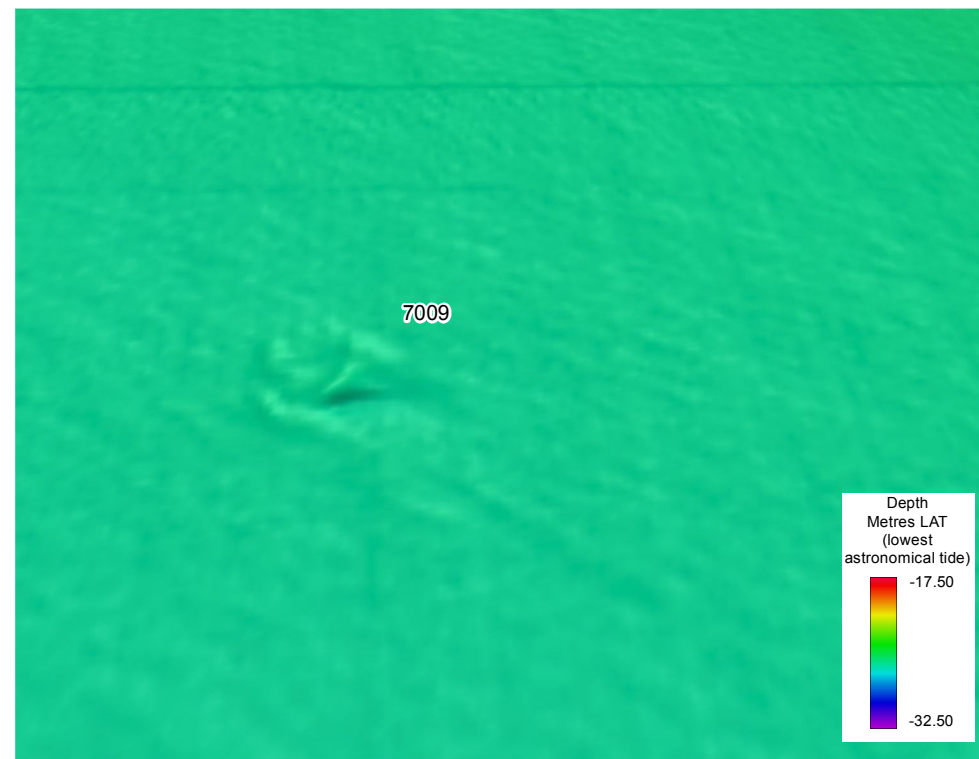
Sidescan sonar waterfall image of anomalies 7015 (Debris; 8.7m x 5.2m x 0.2m) and 7016 (Debris Field; 23.3m x 8.6m x 0.4m), facing west



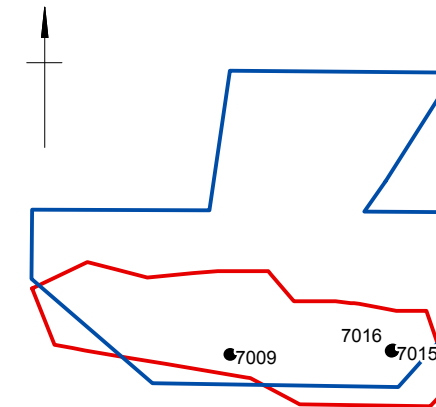
Sidescan sonar waterfall image of anomaly 7009 (Seafloor Disturbance; 14m x 9.7m x 0.3m), facing west



Gridded multibeam bathymetry image of anomalies 7015 and 7016, facing north, 1x vertical exaggeration



Gridded multibeam bathymetry image of anomaly 7009, facing north, 1x vertical exaggeration



- Aggregate Licence Area 457
- Survey Area
- Anomaly

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