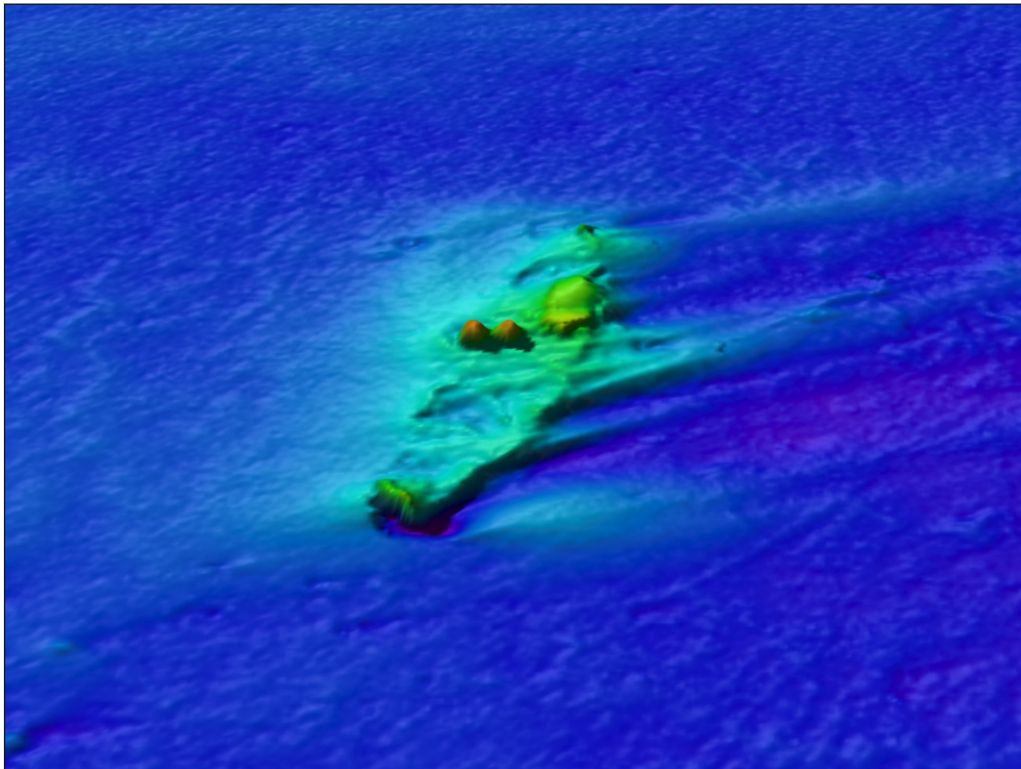




Aggregate Area 473 Annual Monitoring Report (Year 12)

Archaeological Assessment of 2018 Geophysical Data



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Contents

Summary	ii
Acknowledgements.....	iii
1 INTRODUCTION	1
1.1 Project background.....	1
1.2 Previous work	1
1.4 Aims and objectives.....	3
1.5 Co-ordinate system.....	3
2 METHODOLOGY	4
2.1 Introduction.....	4
2.2 Data sources	4
2.3 Geophysical data – technical specifications	4
2.4 Geophysical data – processing	4
2.6 Geophysical data – anomaly grouping and discrimination.....	6
3 SEABED FEATURES ASSESSMENT	7
3.1 Introduction.....	7
3.2 Seabed features assessment results	7
3.3 Within the Active Dredge Zone	8
3.4 Within the Licence Area	10
3.5 Outside the Licence Area.....	10
4 CONCLUSIONS AND RECOMMENDATIONS.....	13
5 REFERENCES	15
APPENDICES	17
Appendix 1 Seabed features of archaeological potential.....	17

List of Tables

Table 1	Delimiting coordinates for Area 473 Study Area
Table 2	Previous work undertaken in Area 473
Table 3	Summary of survey equipment
Table 4	Software used for geophysical assessment
Table 5	Criteria for assigning data quality rating
Table 6	Criteria discriminating relevance of identified features within the Study Area
Table 7	Anomalies of archaeological potential within the Study Area
Table 8	Types of anomaly identified within the Study Area
Table 9	Recommended AEZs within the study area

List of Figures

Figure 1	Location map
Figure 2	Anomalies of archaeological potential and exclusion zone

List of Sheets

Sheet 1	ID 7004 and 7005 (UKHO 20693 and 20713)
Sheet 2	ID 7007 (UKHO 20342)



Summary

Wessex Archaeology was commissioned by CEMEX UK Marine Limited and Hanson Aggregates Marine Ltd to undertake an archaeological assessment of 2018 geophysical survey data as part of the heritage annual monitoring process for aggregate extraction Area 473. The data comprised sidescan sonar and multibeam echosounder data acquired by EGS (International) Limited during September 2018.

The overall aim of this report is to provide an archaeological review of the effects of dredging upon known archaeological sites and previously identified geophysical anomalies that may potentially be of archaeological interest; and to assess the area for any new anomalies that may be of potential archaeological interest.

A total of 24 anomalies of archaeological potential have been identified within the Study Area.

Eight anomalies (**7004**, **7005**, **7007**, **7021**, **7031**, **7039**, **7041**, and **7055**) have been discriminated as A1 - Anthropogenic origin of archaeological interest. These anomalies were classified as wreck material or related structural debris.

Anomalies **7004** and **7005** are located within the Licence Area and Active Dredge Zone. A current 150 m Archaeological Exclusion Zone is already in place around anomalies **7004** and **7005** and it is recommended that this is maintained.

Anomalies **7007**, **7021**, **7031**, **7039**, **7041** and **7055** are located outside the Licence Area and therefore, no Archaeological Exclusion Zone is recommended at this time.

The remaining sixteen anomalies identified within the Study Area for Area 473 were discriminated as A2 - Uncertain origin of possible archaeological interest. No Archaeological Exclusion Zones are recommended for these anomalies at this time.

One anomaly (**7006**), classified as debris, has been identified within the Active Dredge Zone and within the existing 150 m Archaeological Exclusion Zone around anomalies **7004** and **7005**, and is believed to be associated.

All the anomalies are currently situated outside the main area of dredging and, as such, are unlikely to be impacted. However, if this were to change, avoidance would be recommended where feasible.

It is recommended that if any objects of possible archaeological interest are recovered during dredging operations from Area 473, that they should be reported using the established Marine Aggregate Industry *Protocol for Reporting Finds of Archaeological Interest* (BMAPA and English Heritage 2005).



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Aggregate Area 473 Annual Monitoring Report (Year 12)

Archaeological assessment of 2018 geophysical data

1 INTRODUCTION

1.1 Project background

- 1.1.1 Wessex Archaeology was commissioned by CEMEX UK Marine Limited and Hanson Aggregates Marine Ltd to undertake an archaeological assessment of geophysical data, provided by EGS (International) Limited (EGSi), as part of the heritage impact annual monitoring process implemented for aggregate extraction in Area 473. This comprises the Year 12 monitoring assessment associated with Area 473.
- 1.1.2 Aggregate Area 473 is located in the eastern English Channel, approximately 29 km south-west of Beachy Head, East Sussex (Figure 1).
- 1.1.3 The Study Area is defined as the extents of the Survey Area boundary, as provided by EGSi on the 29 October 2018, and includes the Active Dredge Zone (Figure 1).
- 1.1.4 The Study Area is delimited by the following coordinates:

Table 1 Delimiting coordinates for Area 473 Study Area

Easting	Northing
315789	5597406
321657	5598944
321989	5597891
316112	5596355

- 1.1.5 This report consists of an assessment of geophysical survey data comprising sidescan sonar (SSS) and multibeam echosounder (MBES) data sets, which were acquired by EGSi Survey Ltd on 2 to 3 September 2018. The survey extents are based on the overlap of SSS and MBES coverage (Figure 1).
- 1.1.6 Although the extents of the area covered by geophysical survey data is larger than the Study Area, only geophysical anomalies that impact on the Study Area have been included in this report. Any geophysical anomalies identified outside of the defined study area are considered beyond the scope of this report and are not included in the results or gazetteer of anomalies.
- 1.1.7 As required by the licence conditions for the dredging area, geophysical monitoring surveys are undertaken in order to ascertain any changes to the archaeological baseline. This report presents the archaeological assessment of the most recently acquired geophysical survey data for the area (Year 12).

1.2 Previous work

- 1.2.1 In 2002 Wessex Archaeology undertook a desk-based assessment (DBA) in support of a licence application for Area 473. The DBA included an assessment of known, suspected



and potential archaeological sites. This previous work was undertaken using the former study area name: Area 473 East.

1.2.2 The DBA (Wessex Archaeology 2002) compiled and reviewed documentary records of known archaeological sites and assesses the potential for new sites to be discovered. The reviewed material consisted of:

- records of wrecks, obstructions and casualties (documented losses) from the National Monuments Record (NMR);
- the Receiver of Wreck at the Marine and Coastguard agency was approached with regards to reports of historic wrecks;
- records of wrecks and obstructions collated by the UK Hydrographic Office (UKHO);
- records of Palaeolithic and Mesolithic finds from the East Sussex Sites and Monuments Record (ESSMR);
- the Ministry of Defence (Naval staff Directorate) were consulted with regard to the existence of war graves within the Study Area;
- marine geophysical and geotechnical data provided by the client;
- various secondary sources relating to the palaeoenvironment and to the Palaeolithic and Mesolithic archaeology of Northern Europe;
- secondary sources relating to known and potential wreck sites and casualties.

1.2.3 In 2006 an archaeological assessment of geophysical data was undertaken by Wessex Archaeology in preparation for aggregate extraction within Areas 473/2, 474/2 and 475 (Wessex Archaeology 2006). Geophysical datasets assessed for this report consisted of sidescan sonar and sub-bottom profiler data, provided by Hanson Aggregates Marine Ltd., alongside a geotechnical examination of grab samples. The archaeological assessment of geophysical data aimed to locate, assess and report on the position, character and nature of known and newly discovered archaeological sites.

1.2.4 Since dredging began, several subsequent archaeological monitoring assessments have been undertaken. Information on these assessments, and other previous work, is detailed in the table below.

Table 2 Previous work undertaken in Area 473

Year	Type	Company	Reference
2002	DBA in support of license application	Wessex Archaeology	Wessex Archaeology 2002
2006	Initial archaeological assessment of geophysical data	Wessex Archaeology	Wessex Archaeology 2006
2011	Monitoring assessment (Year 4)	EMU	<i>No separate report was provided to Wessex Archaeology; however, details of anomalies are found in Sea Change Heritage Consultants 2013</i>
2013	Monitoring assessment (Year 6)	Sea Change Heritage Consultants	Sea Change Heritage Consultants 2013



Year	Type	Company	Reference
2015	Monitoring assessment (Year 8)	Wessex Archaeology	Wessex Archaeology 2015
2016	Monitoring assessment (Year 9)	Wessex Archaeology	Wessex Archaeology 2016
2017	Monitoring assessment (Year 10)	Wessex Archaeology	Wessex Archaeology 2017
2018	Monitoring assessment (Year 11)	Wessex Archaeology	Wessex Archaeology 2018

- 1.2.5 There are six finds reported in accordance with the British Marine Aggregate Producers Association (BMAPA) *Protocol for Reporting Finds of Archaeological Interest* within Area 473, indicating evidence of maritime and aviation activity remains within the Study Area, all reported since 2005. These included two finds found at the same time (2010-2011) but not necessarily associated with one another: a cannonball and burnt timber (Cemex_0368). The cannonball has a large dent, either from impact or manufacturing fault. The burnt timber is likely to have come from a ship, but this has not been proven. Another cannonball was reported in May 2011 (Hanson_0359). Research showed this was likely to have been fired from a 32-pounder or demi-cannon.
- 1.2.6 Two modern pieces of debris were also reported from the vicinity of Study Area 473. Half an iron artillery shell (Hanson_0089) was reported 2006–2007. A copper alloy hinge (Hanson_0179) was reported in June 2009 and is presumed, but not confirmed, to have come from a vessel.
- 1.2.7 The remaining find is described as a metal weight, dated as post-medieval, was reported 2012–2013 (Hanson_0489) in a location south-west of the centre of the Licence Area.

1.3 Seabed geology

- 1.3.1 According to the British Geological Survey (BGS) the seabed sediments within the Study Area consist of sandy gravel and muddy sandy gravel (BGS Sheet Sea Bed Sediments, 50°N-00°E and East Channel Association 2003). The underlying Tertiary sediments are the Middle Eocene Barton formation (Hamblin *et al.* 1992). The overall nature of the seabed is relatively flat with no significant bathymetric expressions.

1.4 Aims and objectives

- 1.4.1 The aims and objectives of this assessment are:

- confirm the presence of known or previously located marine sites of archaeological potential and to comment on their apparent character;
- identify, locate and characterise hitherto unrecorded marine sites of archaeological potential;
- comment on the effects of dredging/development on known archaeological sites; and
- provide recommendations for archaeological mitigation.

1.5 Co-ordinate system

- 1.5.1 The survey data was acquired in WGS84 UTM31N and the results are presented in the same coordinate system.

2 METHODOLOGY

2.1 Introduction

2.1.1 The methodology adopted for this assessment conforms to the Standard and Guidance for Archaeological Desk-based Assessment published by the Chartered Institute for Archaeologists (CIfA 2014) and the BMAPA and English Heritage (2003) Marine Aggregate Dredging and the Historic Environment guidance note.

2.2 Data sources

2.2.1 A number of data sources were consulted during this assessment, including:

- Geophysical survey datasets (MBES and SSS) acquired by EGSi;
- Recorded wreck and obstruction data acquired via the United Kingdom Hydrographic Office (UKHO);
- Past reports and previous archaeological investigations, as detailed in section 1.2.
- Client supplied survey reports (EGSi 2018)

2.3 Geophysical data – technical specifications

2.3.1 The geophysical data were acquired on board EGSi vessel *EGS Pioneer* between 1 and 2 September 2018, at approximately 90 m line spacing, aligned WSW – ENE, with no cross lines (EGSi 2018). Further details on the equipment used are outlined in Table 2:

Table 3 Summary of survey equipment

Survey Company	Survey Vessel	Data Type	Equipment	Data Format
EGSi	<i>EGS Pioneer</i>	SSS	Klein 3000 (132 / 445 kHz), 100 m range	. <i>xtf</i>
		MBES	Kongsberg EM2040D (400 kHz)	. <i>xyz</i>
		Positioning	V5 Applanix POS MV 320 POS MV 320 C&C Technologies C-NAV 3050 GPS Sonardyne Scout Plus USBL	N/A

2.4 Geophysical data – processing

2.4.1 A number of datasets were assessed over the study area, each dataset was processed separately using the following software (Table 3).

Table 4 Software used for geophysical assessment

Dataset	Processing Software	Interpretation and rationalisation
SSS	CodaOctopus Survey Engine v5.7	ArcMap v10.5
MBES	QPS Fledermaus v7.8.1	

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

2.4.3 The high frequency .*xtf* SSS data files were processed using CodaOctopus Survey Engine Sidescan+ 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.

- 2.4.4 A mosaic of the SSS is produced during this process to assess the quality of the sonar towfish positioning. This process allows the position of anomalies to be checked between different survey lines and for the positioning to be further refined if necessary.
- 2.4.5 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.

2.5 Geophysical data – data quality

- 2.5.1 Once processed, the geophysical data sets were individually assessed for quality and their suitability for archaeological purposes, and rated using the following criteria (Table 4).

Table 5 Criteria for assigning data quality rating

Data quality	Description
Good	Data which are clear and unaffected or only slightly affected by weather conditions, sea state, background noise or data artefacts. Seabed datasets are suitable for the interpretation of upstanding and partially buried wrecks, debris fields, and small individual anomalies. The structure of wrecks is clear, allowing assessments on wreck condition to be made. Subtle reflectors are clear within SBP data. These data provide the highest probability that anomalies of archaeological potential will be identified.
Average	Data which are moderately affected by weather conditions, sea state and noise. Seabed datasets are suitable for the identification of upstanding and partially buried wrecks, the larger elements of debris fields and dispersed sites, and larger individual anomalies. Dispersed and/or partially buried wrecks may be difficult to identify. Interpretation of continuous reflectors in SBP data is problematic. These data are not considered to be detrimentally affected to a significant degree.
Below Average	Data which are affected by weather conditions, sea state and noise to a significant degree. Seabed datasets are suitable for the identification of relatively intact, upstanding wrecks and large individual anomalies. Dispersed and/or partially buried wrecks, or small isolated anomalies may not be clearly resolved. Small palaeogeographic features, or internal structure may not be resolved in SBP data.
Variable	This category contains datasets where the individual lines range in quality. Confidence of interpretation is subsequently likely to vary within the study area.

- 2.5.2 The MBES data were rated as ‘Good’ using the above criteria. The data quality and resolution of 0.5 m was found to be of a good standard and suitable for archaeological assessment of objects and debris over 0.5 m in size.
- 2.5.3 The SSS data have been rated as ‘Average’ using the above criteria table. The data is not always clearly seen towards the outer ranges, making the identification of finer details and smaller objects more difficult. Some lines were affected by sea state resulting in cable snatching being visible, which has affected the data quality of some lines. However, large and upstanding objects were visible and, as such, the data are considered suitable for archaeological interpretation.



2.6 Geophysical data – anomaly grouping and discrimination

- 2.6.1 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 exploration area.
- 2.6.2 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 SSS anomalies.
- 2.6.3 All geophysical anomalies identified within the previous monitoring reports outlined in Section 1.2 have also been grouped at this stage and compared with the results of the most recent 2018 dataset.
- 2.6.4 Any anomalies that were previously identified but have not been observed within the most recent 2018 dataset have been removed from the gazetteer.
- 2.6.5 Anomalies that have been previously identified by Wessex Archaeology (2015; 2016; 2017; 2018) have retained their original identification number. Newly identified anomalies have been issued with a new number starting with 7049.
- 2.6.6 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. For anomalies located on the seabed, these flags are ascribed as follows (Table 5).

Table 6 Criteria discriminating relevance of identified features within the Study Area

Overview classification	Discrimination	Criteria	Data type
Archaeological	A1	Anthropogenic origin of archaeological interest	MBES, SSS, Mag.
Archaeological	A2	Uncertain origin of possible archaeological interest	MBES, SSS, Mag.
Archaeological	A3	Historic record of possible archaeological interest with no corresponding geophysical anomaly	MBES, SSS, Mag.

- 2.6.7 In order to provide direct comparison with previous monitoring reports (EMU 2011, Sea Change 2013) the A1 discrimination can be considered to be High Potential (defined as an anomaly representing an object or site of anthropogenic origin and of likely archaeological interest); A2 discrimination can be considered to be of medium potential (defined as an anomaly representing an object or site of likely anthropogenic origin that would require further investigation in order to clarify its origin and establish its archaeological potential) or of low potential (defined as an anomaly representing an object or site of possible anthropogenic origin and unknown archaeological interest that does not require further investigation); A3 discrimination can be considered as low potential. Discrimination, descriptions of the anomalies are provided in Appendix I.
- 2.6.8 Anomalies that were identified within the 2018 geophysical dataset but are located outside the Study Area, as provided by EGSi, are considered outside the limits of this assessment and have been removed from the final gazetteer.

- 2.6.9 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 SEABED FEATURES ASSESSMENT

3.1 Introduction

- 3.1.1 The geophysical data were assessed to identify features of archaeological potential relating to maritime and aviation activity.
- 3.1.2 Four recorded wrecks have been identified by the UKHO as associated with Area 473.
- 3.1.3 One of these, the recorded position of the SS *Seaford* (UKHO 20332), is located approximately 24 m from the edge of the south-west of this Dredging Licence Area and 320 m from the Study Area. The wreck location was not covered by the 2018 geophysical data. The UKHO record states that it was last observed in 2014 measuring 75 m x 11 m x 6.2 m. This wreck has an existing 100 m Exclusion Zone placed around the extents of this wreck which would impact on the Licence Area for Area 473. However, the Exclusion Zone does not impact on the Study Area and as such is not included in the gazetteer.
- 3.1.4 The remaining three recorded wrecks are located within the Study Area and are described in detail in the following results section (section 3.2).

3.2 Seabed features assessment results

- 3.2.1 The results of this assessment are collated in gazetteer format detailed in Appendix 1, and the distribution of identified anomalies is illustrated in Figure 2.
- 3.2.2 Twenty-four anomalies have been identified as being of possible archaeological potential within the study area and are discriminated as shown in Table 6.

Table 7 Anomalies of archaeological potential within the Study Area

Archaeological discrimination	Quantity			Interpretation
	Active Dredge Zone	Inside Licence Area	Outside Licence Area	
A1	2	0	6	Anthropogenic origin of archaeological interest
A2	1	2	13	Uncertain origin of possible archaeological interest
A3	0	0	0	Historic record of possible archaeological interest with no corresponding geophysical anomaly
Total	3	2	19	

- 3.2.3 Furthermore, these anomalies can be classified by probable type, which can further aid in assigning archaeological potential and importance (Table 7).

Table 8 Types of anomaly identified within the Study Area

Anomaly classification	Definition	Number of anomalies			
		Active Dredge Zone	Inside Licence Area	Outside Licence Area	Type total
Wreck	Areas of coherent structure including wrecks of ships, submarines and some aircraft (where coherent structure survives)	2	0	1	3
Debris field	A discrete area containing numerous individual debris items that are potentially anthropogenic, and can include dispersed wreck sites for which no coherent structure remains	0	0	1	1
Debris	Distinct objects on the seabed, generally exhibiting height or with evidence of structure, that are potentially anthropogenic in origin	1	0	4	5
Rope/chain	Curvilinear dark reflectors, often with a small amount of height, indicating rope or chain (if ferrous)	0	2	8	10
Dark reflector	Individual objects or areas of high reflectivity, displaying some anthropogenic characteristics. Precise nature is uncertain	0	0	5	5
Total		3	2	19	24

3.2.4 There were 77 geophysical anomalies identified in previous monitoring reports (Wessex Archaeology 2015; 2016; 2017; 2018, Sea Change 2013, EMU 2011) as features of possible archaeological potential located within the Study Area. Thirty-four of these anomalies were grouped with features identified in the current dataset by Wessex Archaeology and have been retained in this report. Forty-three anomalies were not observed within this 2018 dataset (Wessex Archaeology 2015; 2016; 2017; Sea Change 2013). This could be due to anomalies being interpreted as natural features by Wessex Archaeology within the current dataset, or indicate some features may be buried within the seabed sediment at present.

3.3 Within the Active Dredge Zone

3.3.1 Three anomalies have been identified within the Active Dredge Zone (**7004**, **7005** and **7006**), two of which have been discriminated as A1 – Anthropogenic origin of archaeological interest.

3.3.2 These two A1 anomalies (**7004** and **7005**) have been previously identified as two sections of the same wreck in Years 8, 9, 10 and 11 (Wessex Archaeology 2015; 2016; 2017; 2018, 7004 and 7005), Year 6 (Sea Change 2013, SC_0001) and Year 4 (EMU 2011, EMU_Area473_0031a and b). They were previously recorded as having high potential.

3.3.3 From this most recent dataset, anomaly **7004** has been identified in the SSS data as a large, elongated feature with a bright shadow which, based on UKHO record 20713, is thought to be the larger section of the wreckage of submarine UC65. The wreck appears to be partially broken up with some possible structures visible. On the MBES data the feature is seen as an elongated mound orientated north-west to south-east. A distinct mound is identified on the south-west end of this section of the wreck, possibly representing a structure such as the conning tower, however this cannot be confirmed without further investigation. If this is the conning tower, it indicates that this section of the wreckage is listing slightly towards the west. The wreckage appears to be relatively intact, however some smaller mounds along the north-eastern edge may be associated debris which indicates partial disintegration. The measurements for this feature are 31.2 x 9.7 x 4.0 m.

The wreckage appears to have sediment build up in the central section of the wreck, and associated scour extending approximately 75 m ENE. Another similar, but smaller anomaly is identified approximately 13 m to the SSE, and has been interpreted as the smaller section of the same wreck (**7005**) with this feature (**7004**) representing the larger section (Sheet 1).

- 3.3.4 Anomaly **7005** is located approximately 13 m SSE from the very southern extents of anomaly **7004**, within the MBES data. In the SSS data, anomaly **7005** is identified as relatively large, elongated dark reflector with a long, bright, distinct shadow. The measurements for this section of the wreckage are 12.4 x 6.2 x 3.4 m. The wreck appears to be partially broken up with some very small bright and dark reflectors observed in the vicinity, which may represent associated items of debris. On the MBES data the feature is seen as an elongated mound orientated NNW-SSE. The wreckage appears to be relatively intact, with an accumulation of sediment around the wreckage's central section. The wreck has some associated scour extending approximately 50 m ENE. This anomaly has been interpreted as the smaller section of a wreck in two parts (Sheet 1).
- 3.3.5 A current 150 m Archaeological Exclusion Zone (AEZ) exists around the extents of the wreck boundary. From the MBES data it is observed that dredging operations have taken place up to 46 m to the west and south from the wreck extents, although these are known to be historical and the evidence of dredging is the same as in 2015 (Year 8).
- 3.3.6 Anomalies **7004** and **7005** are associated with the location of a UKHO record (UKHO 20693) reported by divers to be the wreck of a German minelaying submarine. The form of anomalies **7004** and **7005** is consistent with that of a broken-up submarine.
- 3.3.7 The UKHO record of German minelaying submarine UC65 (UKHO 20713) is located approximately 2 km east of these wreck anomalies. However, previous assessments Wessex Archaeology (2015; 2016; 2017; 2018) proposed that anomalies **7004** and **7005** represent the wreck of the submarine UC65.
- 3.3.8 The UKHO record shows that the UC65 had similar original dimensions (52.7 m x 5.2 m) to the total recorded from anomalies **7004** and **7005** and previous diving reports for the UC65 have recorded its having broken into two pieces (McCartney 2003). As such, anomalies **7004** and **7005** are associated with the recorded position of UKHO 20693 but with the recorded details of UKHO 20713.
- 3.3.9 The UC65 was a World War I German minelaying Submarine with a formidable service history having sunk 103 ships on 11 patrols. UC65 was built by Blohm and Voss, Hamburg and was commissioned on 8th July 1916 (McCartney 2003). Furthermore, it was a rare causality of an enemy submarine, having been torpedoed and sunk by British Submarine HMS C15 on 3rd November 1917 (Messimer 2002, 304).
- 3.3.10 The remaining anomaly identified within the Active Dredge Zone (**7006**) has been discriminated as A2 - Uncertain origin of possible archaeological interest.
- 3.3.11 Anomaly **7006** has been previously observed in Years 8, 10 and 11 (Wessex Archaeology 2015; 2017; 2018), Year 6 (Sea Change 2013; SC_0005) and Year 4 (EMU 2011; EMU_Area473_0030). However, it was not observed in the 2015 dataset (Year 9, Wessex Archaeology 2016). This anomaly has been previously recorded as having medium potential.
- 3.3.12 Anomaly **7006** has been classified as an individual piece of debris and was observed in the SSS data as a straight, elongated dark reflector measuring 5.3 x 1.6 x 0.5 m. This anomaly



was not positively identified in the MBES data, although the recorded location is within an area of slightly disturbed sediment. This object is located 52 m north-west of the central position of wreck anomaly **7004**, within the current AEZ, and has been interpreted as debris which may be associated with this wreck.

3.4 Within the Licence Area

- 3.4.1 Two anomalies have been identified within the Licence Area but not within the Active Dredge Zone (**7026** and **7049**) and have been discriminated as A2 - Uncertain origin of possible archaeological interest.
- 3.4.2 One of these anomalies (**7026**) was previously observed in Years 10 and 11 (Wessex Archaeology 2017; 2018), but has not been observed in prior monitoring reports.
- 3.4.3 Anomaly **7026** has been classified as a length of rope or chain; identified in the SSS data only as a faint, curvilinear object measuring 22.2 x 0.5 m. This was previously identified as a curvilinear dark reflector measuring 40.8 x 0.8 x 0.1 m. It is possible that the differences in dimensions are due to the feature being partially buried by mobile sediments.
- 3.4.4 The remaining anomaly (**7049**) has not been previously identified.
- 3.4.5 Anomaly **7049** has been classified as rope or chain, identified in the SSS data as a curvilinear dark reflector, measuring in total 160.9 x 1.0 x 0.1 m; however, only part of the feature is located within the the Study Area.
- 3.4.6 This previously unidentified object could represent previously buried debris of archaeological potential, but may also represent modern debris, recently discarded.

3.5 Outside the Licence Area

- 3.5.1 Nineteen anomalies have been identified outside the Licence Area (**7001, 7007, 7021, 7031, 7032, 7039, 7041-2, 7048** and **7050-9**), of which six (**7007, 7021, 7031, 7039, 7041** and **7055**) have been discriminated as A1 – Anthropogenic origin of archaeological interest.
- 3.5.2 Anomaly **7007** has been classified as a wreck and was identified within previous monitoring reports in Years 8, 9 10 and 11 (Wessex Archaeology 2015; 2016; 2017; 2018), in Year 6 (Sea Change 2013, SC_0002) and in Year 4 (EMU 2011, EMU_Area473_0042). It has previously been recorded as having high potential.
- 3.5.3 Anomaly **7007** was identified within the SSS data as a distinct, elliptical outline of a wreck measuring 75.5 x 21.8 x 3.6 m, that appears upright and relatively intact, however a number of possible debris items are identified along the wreck's eastern edge, which suggests it may be partially broken up. The wreck appears to be embedded in the seabed sediments with some internal structure and external debris visible. The wreck was observed in the MBES data as a clear outline of a wreck, orientated NNE - SSW, which appears to be partially buried along its western edge. Other mounds, possibly remnants of superstructures, can be seen along the length of the wreckage. Two distinct rounded mounds that were interpreted as possible boilers were visible towards the north-west of the wreck. Some sediment build-up was observed around the wreck, mostly along the western edge and the centre of the eastern edge. Some deep scour is visible at the southern extents and extending over 100 m to the ENE (Sheet 2).
- 3.5.4 Some possible surrounding debris has been identified and is further described below (**7021, 7031, 7032, 7039, 7041, 7042**, and **7052-5**). The sediment build-up around the wreck may

inhibit the identification of further debris, especially along the western extents, where the build-up is greatest.

- 3.5.5 This vessel has been associated with two different UKHO positions; one for the vessel *SS Caterham* (probably) (UKHO 20342) and one for the German submarine UC65 (possibly) (UKHO 20713).
- 3.5.6 The *SS Caterham* was a British cargo ship built by Short Brothers in Sunderland in 1886 with a tonnage of 1777 t and a triple expansion engine with single shaft. Its dimensions measured 83.2 m in length, 11.6 m in width with a 6.1 m draught. This UKHO record 20342 of the *SS Caterham* was more likely to correspond to the observed wreck due to the form being unlike a submarine and the dimensions of the original vessel; 83.2 m x 11.6 m x 6.1 m, being closely resembled by those observed within the geophysical data. However, the UKHO record also states that the wreck was dived in 1993 and identified as a very old steel coaster.
- 3.5.7 In previous monitoring reports Wessex Archaeology (2015; 2016; 2017; 2018) it has been proposed that due to discrepancies between the original dimensions, dive reports and those features observed in the geophysical data, it is not possible to definitively interpret this wreck as *SS Caterham*.
- 3.5.8 Anomaly **7039** has been classified as a debris field and was identified as an irregular but compact area of numerous dark reflectors of varying forms and sizes, surrounding the norther and eastern extents of wreck **7007** and measuring 87.4 x 57.4 x 1.6 m (Figure 2, Sheet 2). This anomaly was previously observed in Year 11 (Wessex Archaeology 2018), but had not been observed in prior monitoring reports, although some individual larger pieces have been previously tagged separately. The debris field was observed in the SSS data only, although some of the larger anomalies were observed as discrete objects in the MBES data (Figure 2; Sheet 2). Larger individual debris features have been tagged separately and are discussed below.
- 3.5.9 The remaining four anomalies discriminated as A1 (**7021**, **7031**, **7041**, and **7055**) are located within debris field **7039** along the eastern extents of **7007**. Of these, four (**7021**, **7031**, **7032** and **7041**) have been identified previously.
- 3.5.10 Anomaly **7021** is interpreted as an item of debris and has been identified in the previous three monitoring reports (Wessex Archaeology 2016; 2017; 2018). It was observed in the most recent dataset as an angular object measuring 4.5 x 0.8 x 0.6 m, located approximately 56 m north-east from the central position of wreck **7007**, and observed in the MBES data as a small mound. It was previously observed as an angular object measuring 3.7 x 0.5 x 0.6 m, which seem to suggest that there are complex processes of sediment accretion and erosion occurring across the site. Anomaly **7021** is located at the north-eastern end of anomaly **7032**, which is possibly an associated length of rope/chain.
- 3.5.11 Anomaly **7031** was identified in the previous two monitoring reports (Wessex Archaeology 2017; 2018). It has been identified in the most recent dataset as a slightly elongated, elliptical object, measuring 5.1 x 1.1 x 0.1 m, located approximately 36 m south-east of the central position of wreck **7007**. The object appears to possibly be either hollow, or possibly two parallel objects close together. It was previously identified as an elliptical object measuring 4.5 x 1.2 x 0.3 m.
- 3.5.12 Anomaly **7041** was previously identified in the last dataset (Wessex Archaeology 2018). It has been identified in the most recent dataset as an elongated dark reflector with slight

height, measuring 5.2 x 0.4 x 0.1 m, located approximately 38 m south-east of the central position of wreck **7007**. It was previously identified as a straight edge of an angular object measuring 2.8 x 1.2 x 0.5 m.

- 3.5.13 Anomaly **7055** has not been previously identified. In this dataset, the anomaly is seen as a poorly defined, elongated dark reflector with height, measuring 4.5 x 0.8 x 0.3 m, identified approximately 18 m east of the central position of wreck 7007
- 3.5.14 The remaining thirteen anomalies (**7032**, **7042**, **7048**, **7050-4** and **7056-9**) identified within the Study Area but outside the Licence Area have been discriminated as A2 - Uncertain origin of possible archaeological interest.
- 3.5.15 Of these A2 anomalies, eight have been classified as lengths of rope/chain (**7032**, **7042**, **7051-4** and **7058-9**).
- 3.5.16 Five of these interpreted lengths of rope/chain are possibly associated with wreck **7007** (**7032**, **7042** and **7052-4**). Three of these rope/chain features were located within debris field **7039**, extending from the eastern extents of the wreck (**7032**, **7042** and **7054**). The remaining two (**7052-3**) are located approximately 58 m from the central position of wreck **7007**.
- 3.5.17 Although these features are associated with wreck **7007**, rope or chain is not considered to have as high archaeological potential as debris, and so these features have been discriminated as A2 features.
- 3.5.18 Two of these rope/chain features have been identified in previous datasets. Anomaly **7042**, which was identified in the most recent datasets a narrow, curvilinear dark reflector measuring 57.9 x 0.4 x 0.1 m, was first identified in the previous dataset (Wessex Archaeology) as a length of rope/chain measuring 52.3 x 0.3 x 0.0 m.
- 3.5.19 Anomaly **7032** was identified in two previous datasets (Wessex Archaeology 2017; 2018). It was originally identified as a long curvilinear object, measuring 48.9 x 0.4 x 0.5 m, and interpreted as being a linear debris item however, based on its form in the most recent dataset, has been reclassified as a possible length of rope/chain. In the most recent dataset, the feature is identified as a faint linear dark reflector with slight height, measuring 53.6 x 0.6 x 0.2 m, which appears to extend north-east from wreck **7007**. The feature was originally assigned an A1 archaeological discrimination. However, based on the latest data and the feature's similarity to anomalies **7042** and **7054**, the feature is now considered to be of lower archaeological importance and, as such, has been reassigned an A2 archaeological discrimination.
- 3.5.20 The remaining three rope/chain features were isolated on the seabed (**7051** and **7058-9**). None of these anomalies have been previously identified.
- 3.5.21 The remaining five A2 anomalies located outside the license area (**7001**, **7048**, **7050** and **7056-7**) have all been classified as dark reflectors. Two of these features have been identified in previous datasets (**7001** and **7048**). Dark reflector **7001** was first identified during the 2016 monitoring assessment (Wessex Archaeology 2016) as a distinct curved anomaly measuring 2.3 x 1.0 x 0.3 m, however was not identified during subsequent surveys, possibly indicating partial burial by mobile sediments. In this dataset, the feature is seen as an elongated dark reflector measuring 4.9 x 1.0 x 0.5 m.

- 3.5.22 Anomaly **7048** was first identified in the previous dataset (Wessex Archaeology 2018) which was identified as a dark reflector with total measurements of 3.4 x 1.9 x 1.3 m. In the most recent dataset, the feature was seen as an angular dark reflector measuring 3.4 x 2.5 x 1.3 m.
- 3.5.23 Features that were previously unidentified could represent previously buried debris items of archaeological potential, however they may also represent recently discarded modern debris.

4 CONCLUSIONS AND RECOMMENDATIONS

- 4.1.1 With regards to mitigation of archaeology the marine planning authority, working with the relevant regulator and advisors, take account of the desirability of sustaining and enhancing the significance of heritage assets and adopt a general presumption in favour of the conservation of designated heritage assets within an appropriate setting (HM Government 2011; DCALG 2012).
- 4.1.2 The assessment of the geophysical data for Area 473 resulted in a total of 24 anomalies identified as being of possible archaeological interest.
- 4.1.3 A total of eight anomalies were assigned an A1 archaeological rating (**7004, 7005, 7007, 7021, 7031, 7039, 7041** and **7055**).
- 4.1.4 Anomalies **7004** and **7005** have been classified as two parts of the same wreck and considered to be of a submarine, possibly the UC65, located within the Licence Area and the Active Dredge Zone. A 150 m AEZ is already in place around the extents of **7004** and **7005** and it is recommended that this is maintained in accordance with the current licence. Further details on the AEZ are outlined in the table below (Table 8):

Table 9 Recommended AEZs within the study area

ID Number	Classification	Original Assessment	Position (WGS84 UTM31N)		Status	Exclusion Zone
			Easting	Northing		
7004/7005	Wreck	106780	318808	5597845	Reviewed – updated based on features boundary extents	Maintain existing 150 m buffer around extents of features 7004 and 7005

- 4.1.5 Anomaly **7007** has been classified as a wreck with an associated debris field (**7039**) which comprises several individual pieces of debris (**7021, 7031, 7032, 7039, 7041, 7042,** and **7052-5**). This wreck is located outside the Licence Area and therefore, no AEZ is recommended at this time.
- 4.1.6 A further sixteen anomalies identified within the Study Area for Area 473 were assigned an A2 archaeological rating. No AEZs are recommended for these anomalies at this time. However, debris anomaly **7006** has been identified within the existing 150 m AEZ for wreck anomalies **7004** and **7005**, and within the Active Dredge Zone.
- 4.1.7 For features assigned A2 archaeological discrimination rating, no AEZs are recommended at this time. However, avoidance of these features by micro-siting is recommended if they are proposed to be directly impacted by dredging in the future.



- 4.1.8 It is recommended that if any objects of possible archaeological interest are recovered during any dredging operations in Area 473, that they should be reported using the established Marine Aggregate Industry *Protocol for reporting finds of archaeological interest* (BMAPA and English Heritage 2005). This will establish whether the recovered objects are of archaeological interest and recommend appropriate mitigation measures.



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APPENDICES

Appendix 1 Seabed features of archaeological potential

ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7001	Dark reflector	321425	5598461	A2	4.9	1.0	0.5	Slightly elongated dark reflector, or possibly two objects close together. Feature has a distinct shadow. Possibly natural but looks quite distinct. Feature has some associated scour. Identified previously as a small, distinct curved anomaly measuring 2.3 x 1.0 x 0.3 m. Could be debris or a natural feature.	WA 2016	Outside



ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7004	Wreck	318805	5597856	A1	31.2	9.7	4.0	<p>A large, elongated dark reflector identified on the SSS data, with a large, bright shadow. Identified approximately 13 m NNW of another similar but smaller feature. Possibly the larger sections of the same wreck. The wreck appears to be partially broken up with some possible structures visible. On the MBES data the feature is seen as an elongated mound orientated north-west to south-east. A distinct mound is identified on the south-west end of this section of the wreck, possibly representing a structure such as the conning tower, however this cannot be confirmed without further investigation. If this is the conning tower, it indicates that this section of the wreckage is listing towards the west. Wreckage appears to be relatively intact, however some smaller mounds along the north-eastern edge may be associated debris which may indicate partial disintegration. The wreckage appears to have sediment build up in the central section of the wreck, and associated scour extending approximately 75 m ENE. At the UKHO location of a German minelaying submarine (UKHO 20693) with a second UKHO position (UKHO 20713) of a German minelayer UC65, with original dimensions of 52.7 x 5.2 m, located 2km to the east. Probably associated. Previously observed as an elongate irregular tapering mound, measuring 32.6 x 7.2 x 4.1 m.</p>	<p>WA 2015; WA 2016; WA 2017; WA 2018 (7004), SC 2013 (SC_0001), EMU 2011 (EMU_0031a), WA 2006 (4028)</p> <p>UKHO 20693, UKHO 20713</p>	Active Dredge Zone



ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7005	Wreck	318820	5597829	A1	12.4	6.2	3.4	A relatively large, elongated dark reflector identified on the SSS data, with a long, bright, distinct shadow. Identified approximately 13 m SSE of another similar feature. Possibly two sections of the same wreck. Feature appears to be partially broken up with some very small bright and dark reflectors are observed in the vicinity, which may represent associated items of debris. On the MBES data the feature is seen as an elongated mound orientated NNW - SSE. An accumulation of sediment is identified around the wreckage's central section. The wreck has some associated scour extending approximately 50 m ENE. At the UKHO location of a German minelaying submarine (UKHO 20693) with a second UKHO position (UKHO 20713) of a German minelayer UC65, with original dimensions of 52.7 x 5.2 m, located 2km to the east. Probably associated. Previously observed as an angular object with no obvious internal structure, measuring 10.1 x 6.1 x 3.2 m.	WA 2015; WA 2016; WA 2017; WA 2018 (7005), SC 2013 (SC_0001), EMU 2011 (EMU_0031b), WA 2006 (4028) UKHO 20693, UKHO 20713	Active Dredge Zone
7006	Debris	318754	5597868	A2	5.3	1.6	0.5	Straight, elongated dark reflector with a relatively broad shadow. Located approximately 35 m west of wreck 7004 and is therefore possibly an associated item of debris. Feature was identified previously as a straight sub angular object measuring 7.8 x 1.2 x 1.0 m.	WA 2015; WA 2017; WA 2018 (7006), SC 2013 (SC_0005), EMU 2011 (EMU_0030)	Active Dredge Zone



ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7007	Wreck	321204	5597865	A1	75.5	21.8	3.6	The outline of a partially broken up wreck is seen on the SSS data, with numerous dark reflectors of height, thought to be associated items of debris, seen along its eastern edge. Two distinct objects with height are clearly visible, possibly representing the ships boilers. On the MBES data, the feature is seen as a wreck, orientated NNE - SSW, which appears to be partially buried along its western edge. Other mounds, possibly remnants of superstructures, can be seen along the length of the wreckage. The wreck has associated scour marks extending over 100 m to the ENE. The wreck is located at the position of a UKHO recorded for the SS <i>Caterham</i> (probably - UKHO 20342) which had original dimensions of 83.2 x 11.6 x 6.1 m). However, UKHO record states that divers have identified this wreck as a very old steel coaster in 1993. Also at the UKHO recorded position for submarine UC65 (possibly - UKHO 20713) with original dimensions of 52.7 x 5.2 m. Form and dimensions of wreck are unlike those of a submarine, as stated by this UKHO record, so not considered associated. Previously identified as a distinct outline of a wreck measuring 77.4 x 19.8 x 2.7 m.	WA 2015; WA 2016; WA 2017; WA 2018 (7007), SC 2013 (SC_0002) UKHO 20342	Outside
7021	Debris	321256	5597888	A1	4.5	0.8	0.6	Straight, elongated dark reflector with height, identified at the end of rope/chain 7032 . Possible debris item of debris associated with nearby wreck 7007 . Identified as a small mound in the MBES data. Previously identified as an angular object measuring 3.7 x 0.5 x 0.6 m (WA 2018).	WA 2016; WA 2017; WA 2018 (7021), SC 2013 (SC_0003) UKHO 20342	Outside
7026	Rope/chain	319141	5597426	A2	22.2	0.5	0.0	Faint curvilinear bright reflector. Possibly a shadow however there is no clearly discernible object. Previously identified as an isolated curved dark reflector measuring 40.8 x 08 x 0.1 m.	WA 2017; WA 2018 (7026)	Licence Area



ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7031	Debris	321229	5597839	A1	5.1	1.1	0.1	Slightly elongated, elliptical dark reflector with a very slight shadow. Possibly a hollow object or two parallel objects close together. Identified approximately 36 m south-east of wreck 7007 ; possibly an associated item of debris. Previously identified as an elliptical object with varying shadow measuring 4.5 x 1.2 x 0.3 m (WA 2018).	WA 2017; WA 2018 (7031), UKHO 20342	Outside
7032	Rope/chain	321236	5597872	A2	53.6	0.6	0.2	Narrow, faint linear dark reflector with slight height. Appears to have associated area of low reflectivity, possibly representing an area of associated seabed disturbance or scour. Feature is orientated south-west to north-east, extending out from wreck 7007 and is possibly an associated length of rope/chain. Feature is identified in an area of numerous items of debris and is possibly associated with nearby rope/chain features 7042 and 7054 . Identified in the MBES data as a narrow, curvilinear mound. Feature has a possible associated object with height at one end (7021). Previously identified as a strong linear dark reflector measuring 48.9 x 0.4 x 0.5 m (WA 2018). This anomaly was previously assigned an A1 archaeological discrimination; however, based on the form of the feature as seen in the latest dataset, the feature has been reassigned an A2 archaeological discrimination.	WA 2017; WA 2018 (7032), UKHO 20342	Outside
7039	Debris field	321223	5597857	A1	87.4	57.4	1.6	Irregular area of numerous dark reflectors of varying forms and sizes along the northern and eastern edge of wreck 7007 and assumed to be associated items of debris. Larger pieces tagged separately. Identified previously as a debris field measuring 72.4 x 47.1 x 0.6 m.	WA 2018 (7039), UKHO 20342	Outside



ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7041	Debris	321235	5597845	A1	5.2	0.4	0.1	Elongated dark reflector with slight height identified in an area of debris. Other smaller disturbances to seabed nearby. Identified approximately 38 m south-east of wreck 7007 ; possibly an associated item of debris. Previously identified as the straight edge of an angular object measuring 2.8 x 1.2 x 0.5 m (WA 2018).	WA 2018 (7041), UKHO 20342	Outside
7042	Rope/chain	321239	5597865	A2	57.9	0.4	0.1	Narrow, curvilinear dark reflector with slight height. Feature orientated south-west to north-east, extending out from wreck 7007 . Possibly an associated length of rope/chain. Possibly associated with nearby rope/chain features 7032 and 7054 . Previously identified as a length of rope/chain measuring 52.3 x 0.3 x 0.0 m (WA 2018).	WA 2018 (7042), UKHO 20342	Outside
7048	Dark reflector	321443	5597928	A2	3.4	2.5	1.3	An isolated, angular dark reflector with a relatively broad, bright shadow. Identified in the MBES data as two mounds with some possible slight scour. Previously identified with total measurements of 3.4 x 1.9 x 1.3 m. Could be debris or a natural feature.	WA 2018	Outside
7049	Rope/chain	316709	5596457	A2	160.9	1.0	0.1	Long narrow dark reflector interpreted as being a length of rope/chain. Feature curved round at one end and appears to be in a right angle. Possibly a length of rope/chain however may also be a seabed scar.	-	Licence Area
7050	Dark reflector	321599	5598895	A2	5.9	0.8	0.4	Slightly elongated dark reflector with a bright, slightly irregular shadow. Feature has some associated scour. Possibly two objects parallel to one another. Identified in the MBES data as a distinct mound with scour extending approximately 17 m north-east. Could be debris or a natural feature.	-	Outside
7051	Rope/chain	320955	5598632	A2	40.7	0.3	0.1	A faint, narrow curvilinear dark reflector with height. Relatively isolated on the seabed. Possibly a seabed scar however may also be a short length of rope/chain.	-	Outside

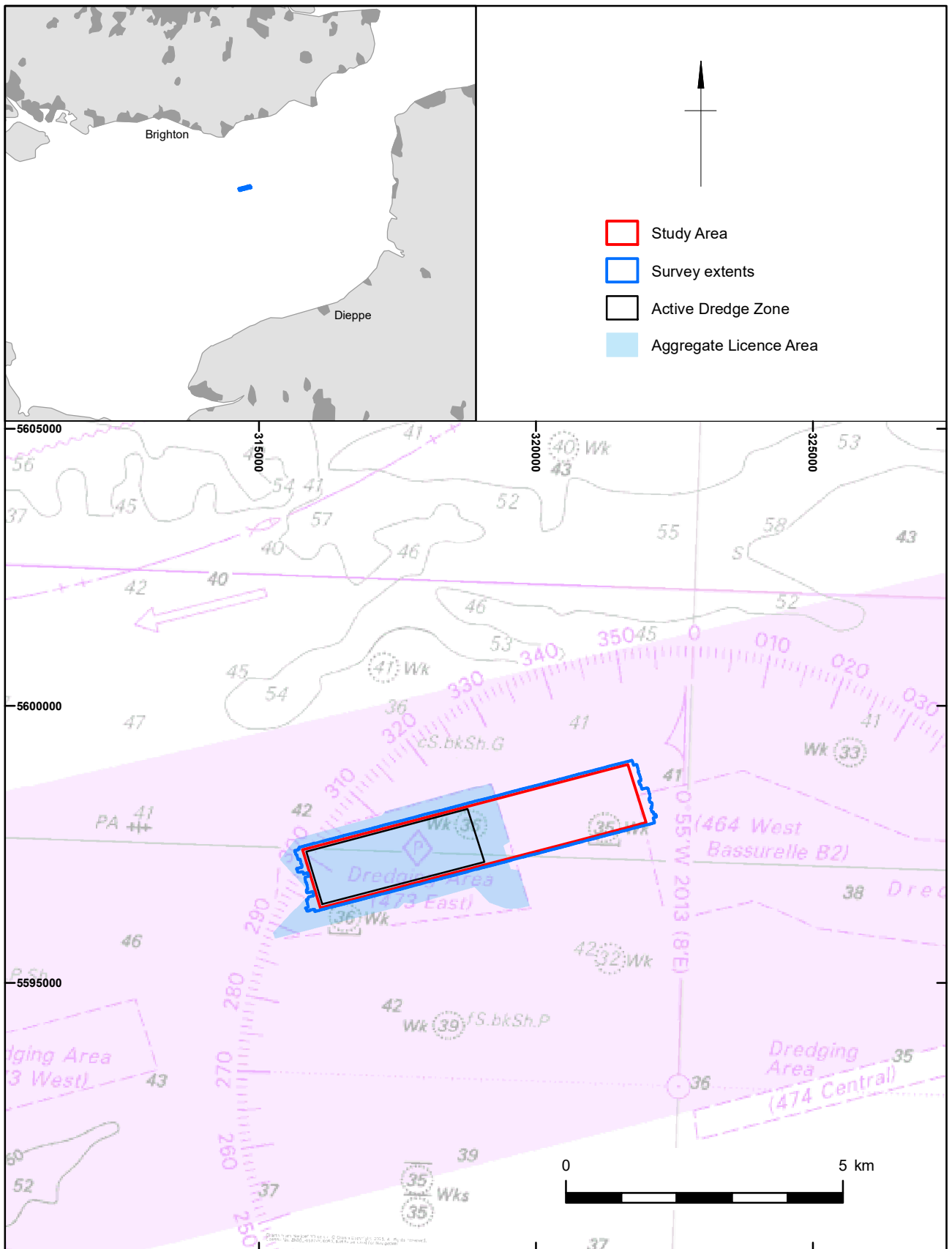



ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7052	Rope/chain	321246	5597824	A2	33.6	1.0	0.1	Slightly curvilinear dark reflector, orientated WNW-ESE, with very slight height identified perpendicular to another similar feature (7053). Difficult to discern a separation between the two features. Identified approximately 35 m from wreck 7007, possibly an associated length of rope/chain. Feature is identified close to previously identified rope/chain items 7045 and 7047 (WA 2018) and therefore may be associated, however this cannot be confirmed from this dataset.	UKHO 20342	Outside
7053	Rope/chain	321247	5597819	A2	43.8	1.1	0.1	Faint curvilinear dark reflector, orientated SW- ENE, with very slight height identified perpendicular to another similar feature (7052). Difficult to discern a separation between the two features. Identified approximately 35 m from wreck 7007, possibly an associated length of rope/chain. Feature is identified close to previously identified rope/chain items 7045 and 7047 (WA 2018) and therefore may be associated, however this cannot be confirmed from this dataset.	UKHO 20342	Outside
7054	Rope/chain	321226	5597856	A2	28.2	0.4	0.1	Narrow, curvilinear dark reflector with slight height. Feature orientated WSW - ESE, extending out from wreck 7007. Possibly an associated length of rope/chain. Possibly associated with nearby rope/chain features 7032 and 7042.	UKHO 20342	Outside
7055	Debris	321221	5597867	A1	4.5	0.8	0.3	A poorly defined, elongated dark reflector with height identified approximately 18 m east of the central position of wreck 7007. Possibly a related item of debris.	UKHO 20342	Outside
7056	Dark reflector	321111	5597829	A2	5.1	1.5	0.6	Small, slightly angular dark reflector with a bright but tapered shadow and some possible associated scour. Possibly natural however is located approximately 75 m from wreck 7007 and therefore has the potential of being an associated item of debris. Identified as a small mound with some slight scour in the MBES data.	-	Outside



ID Number	Classification	Easting	Northing	Archaeological discrimination	Length (m)	Width (m)	Height (m)	Description	External references	Area
7057	Dark reflector	321029	5597889	A2	3.4	2.1	1.1	Small dark reflector with a long, narrow, slightly irregular shadow. Identified in the MBES data as a small mound with a slight depression to the east. Could be debris or a natural feature.	-	Outside
7058	Rope/chain	320837	5597860	A2	13.9	0.8	0.1	Curvilinear dark reflector with height. Relatively isolated on the seabed. Possible short length of rope/chain.	-	Outside

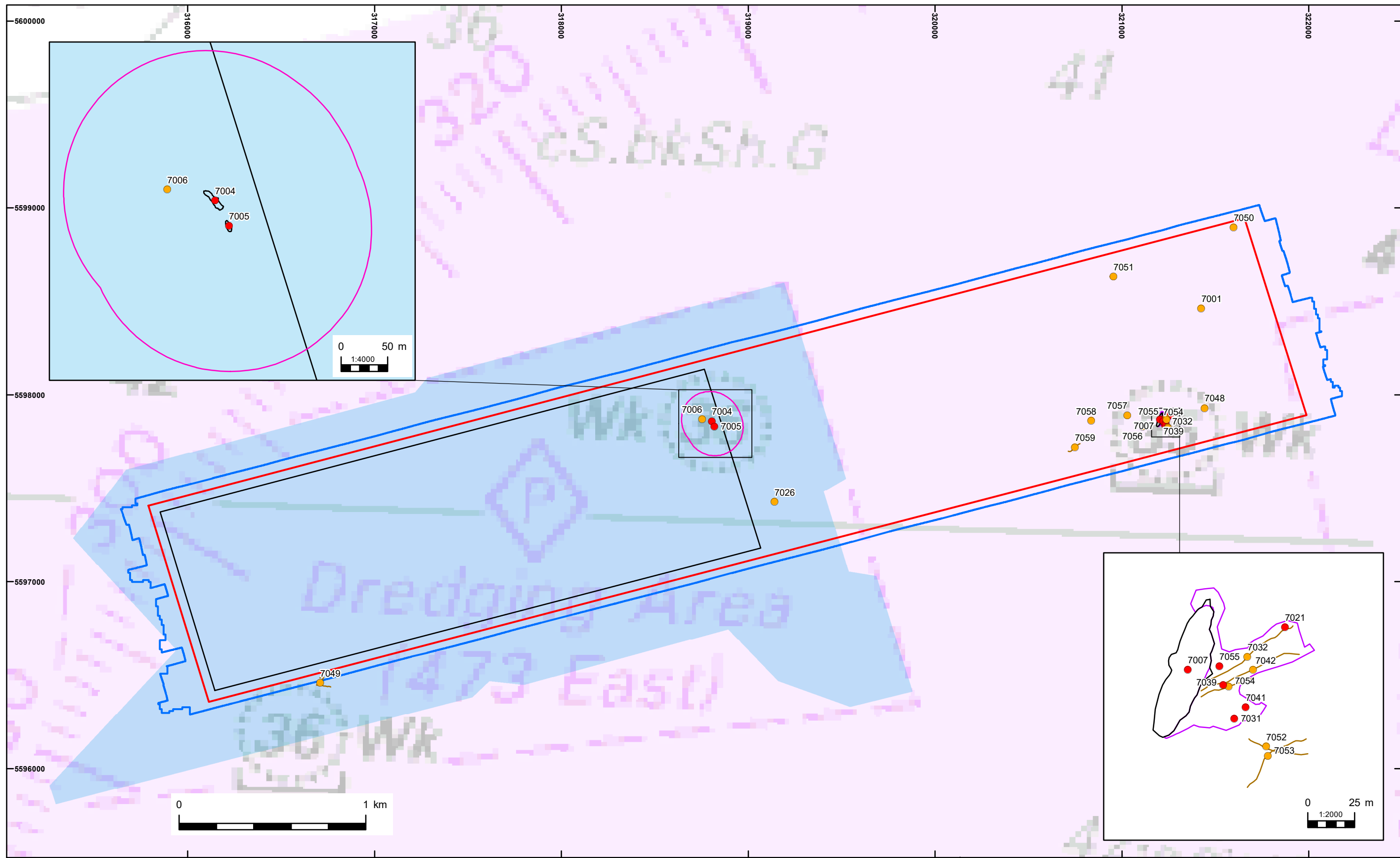
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2. Positional accuracy estimated ± 10 m



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Location map

Figure 1



Study area	Archaeological Exclusion Zone (150 m)	Seabed feature boundary	Anomalies of archaeological potential
Survey extents	Linear seabed features	Wreck	A1 - Anthropogenic origin of archaeological interest
Active Dredge Zone	Rope/chain	Debris field	A2 - Uncertain origin of possible archaeological interest
Aggregate Licence Area			

Coordinate system: UTM WGS84 z31N

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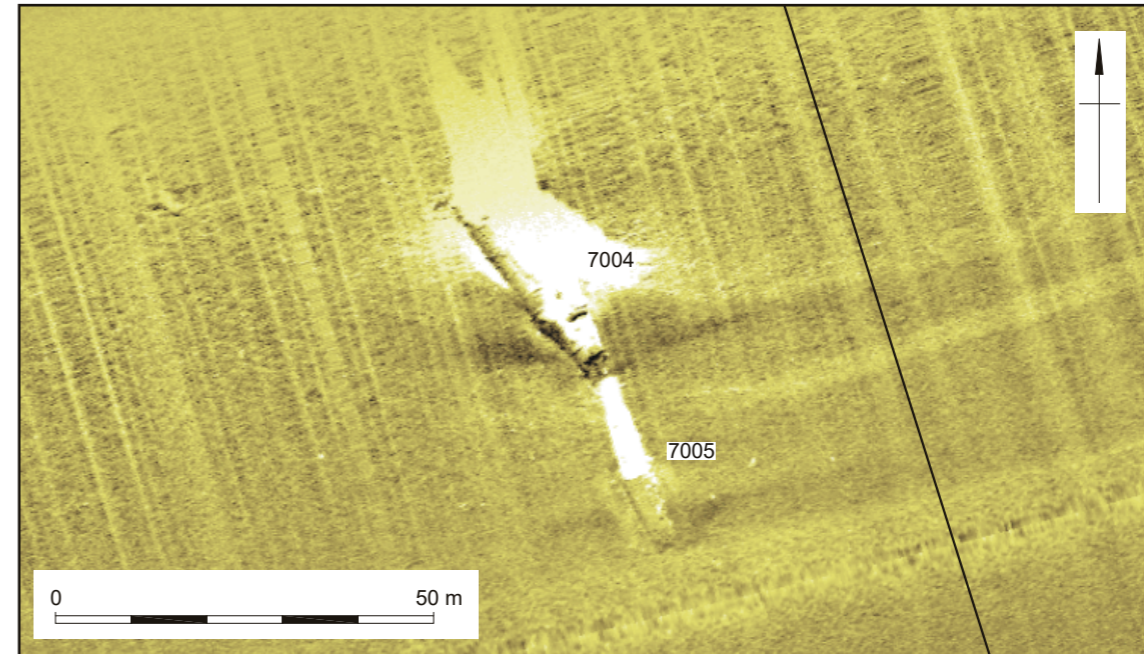
Date:	12/02/2019	Revision number:	0
Scale:	1:20,000, 1:4000 & 1:2000 at A3	Illustrator:	KJF
Path:	W:\Projects\106784\GIS\FigsMXD\Monitoring\2019_02_12		

Anomalies of archaeological potential and exclusion zone

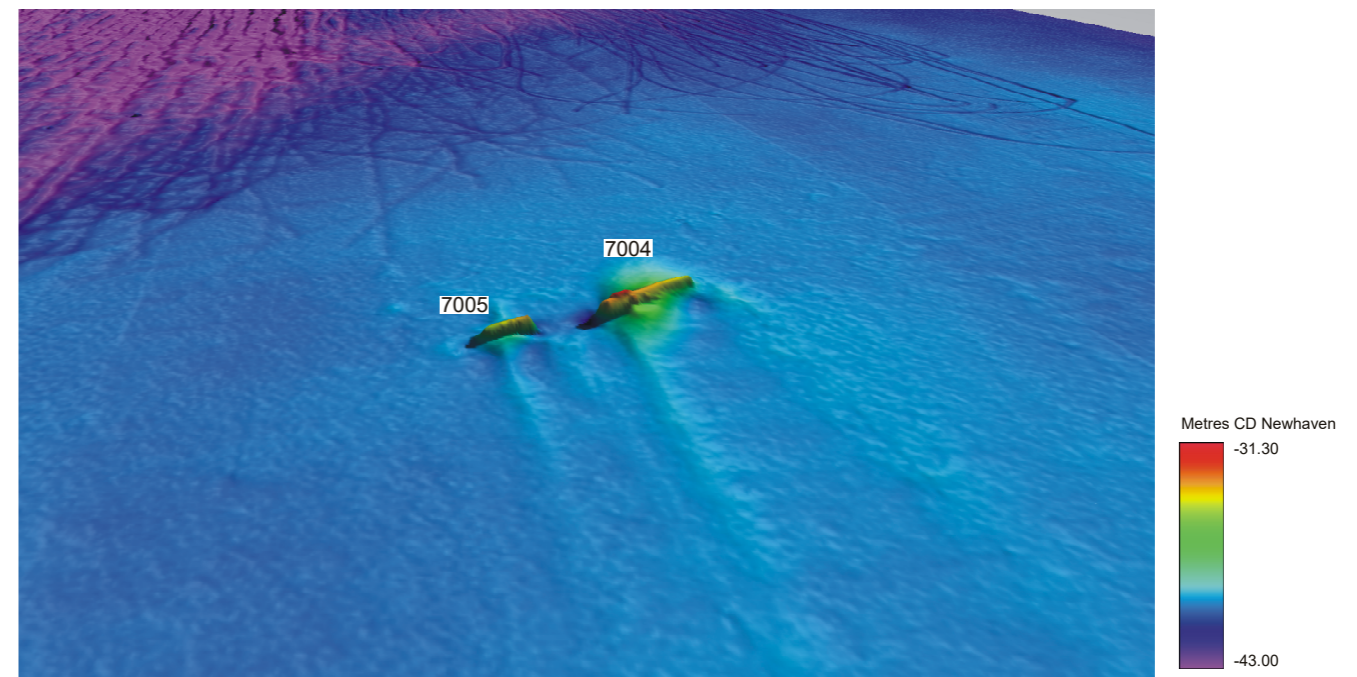
Figure 2

ID 7004 and 7005 UC 65 (possibly) (UKHO 20693 and 20713)

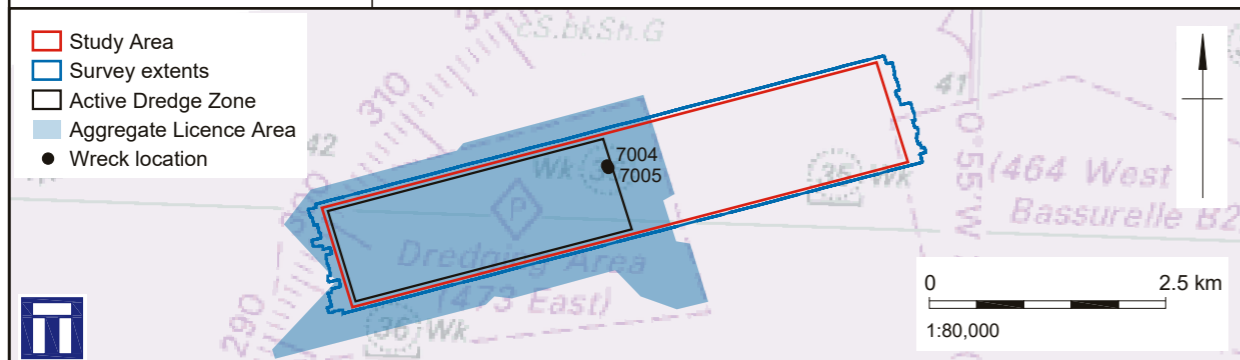
Location		7004: 318805 E, 5597856 N 7005: 318819 E, 5597827 N (WGS84 UTMz31N)	Area	Active Dredge Zone
Archaeological Importance		High		
Geophysical survey dimensions and notes		<p>Dimensions: 7004: 31.2 x 9.7 x 4.0 m 7005: 12.4 x 6.2 x 3.4 m</p> <p>Identified as two distinct structures lying approximately 13 m apart and interpreted as two pieces of the same wreck. Associated with UKHO record 20693, relating to the wreck of a submarine. Identified as a German minelayer by dive reports.</p> <p>The larger section (7004) is positioned to the north-west, identified as a large, elongated dark reflector with some possible structure visible. The smaller section (7005) is positioned 13 m to the south-east. Identified as a large, elongated object with no obvious structure visible and aligned NNW-SSE</p> <p>There is a significant amount of sediment build-up visible along both sides of 7004, and along the eastern extents of anomaly 7005, which may have buried further associated debris within the vicinity. A depression is visible between the two sections of the wreck, which is the assumed break location, and may also obscure the identification of further debris.</p> <p>A further UKHO record (20713) is located approximately 2 km to the east. This record relates to German minelaying submarine, the UC65 (possibly), which was torpedoed and sunk. Although there is a slight discrepancy in dimensions, this could be accounted for by the break, and a torpedo hit could have been the cause.</p>		
Build	Type	German minelaying submarine		
	Construction	Steel		
	Dimensions	52.7 m x 5.2 m Displacement: 511 t.		
	Shipyard	Blohm & Voss, Hamburg		
Loss	Cause	Torpedoed and sunk by British submarine C 15, 3rd November 1917		
Extent of Survival		<p>The larger section of vessel appears to be upright, however the possible structure at the southern end of the features suggests that it may be listing slightly towards the west. The smaller section has no obvious structure visible. The break into two sections is assumed to have occurred at the time of sinking.</p> <p>Measurements in 2017 data: 7004: 32.6 x 7.2 x 4.1 m 7005: 10.1 x 6.1 x 3.2 m</p> <p>The difference in measurements can be explained by possible degradation of the internal structure, causing collapse and spread; or complex processes of sediment accretion and erosion occurring across the site.</p>		



A sidescan mosaic of wreck 7004; 31.2 x 9.7 x 4.0 m and wreck 7005; 12.4 x 6.2 x 3.4 m



A multibeam echosounder image of wreck 7004 and wreck 7005, facing west, x1 vertical exaggeration

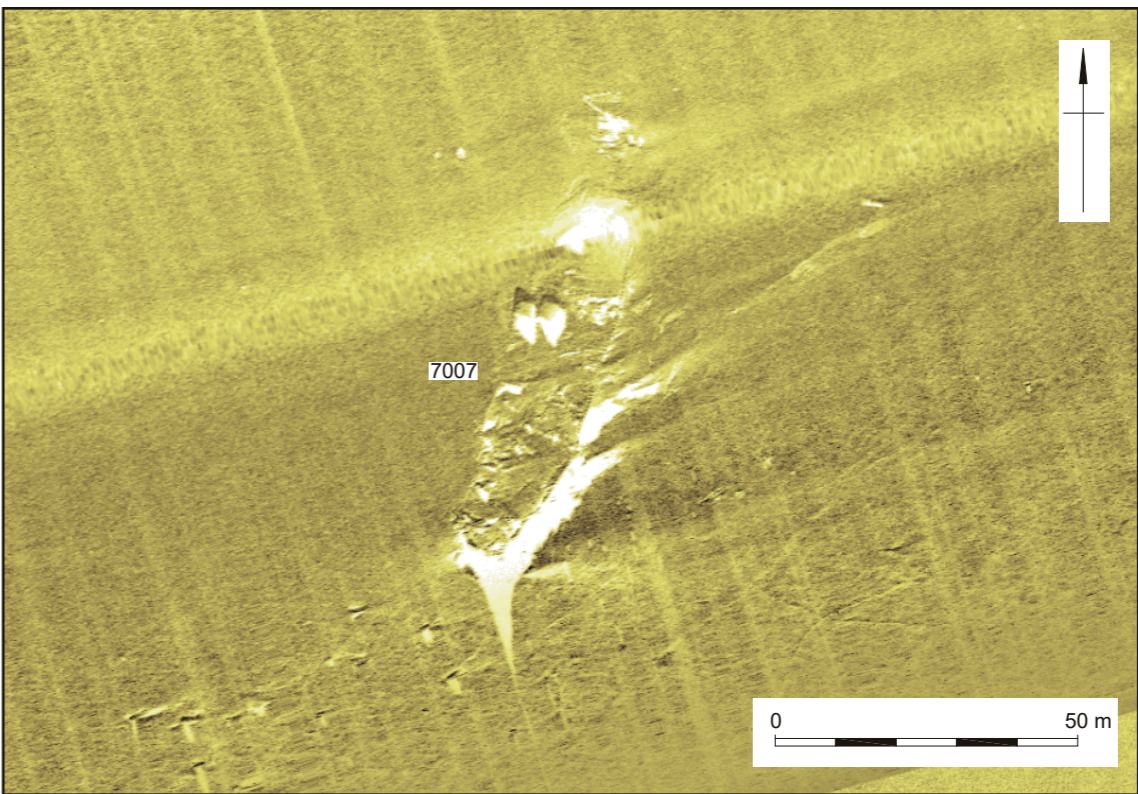


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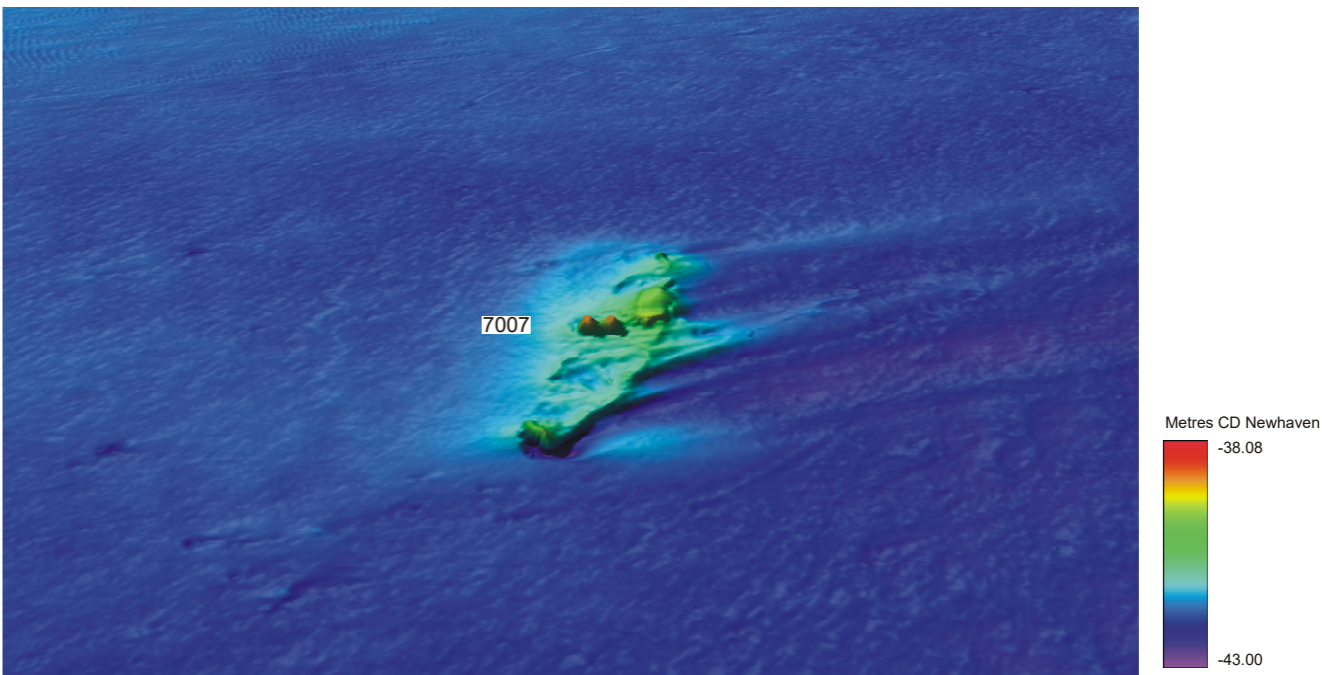
Date:	12/02/2019	Revision Number:	0	Illustrator:	KJF
Path:	W:\Projects\106784\Graphics_Office\Rep figs\Monitoring\2019_02_12				

ID 7007 Unknown (UKHO 20342)

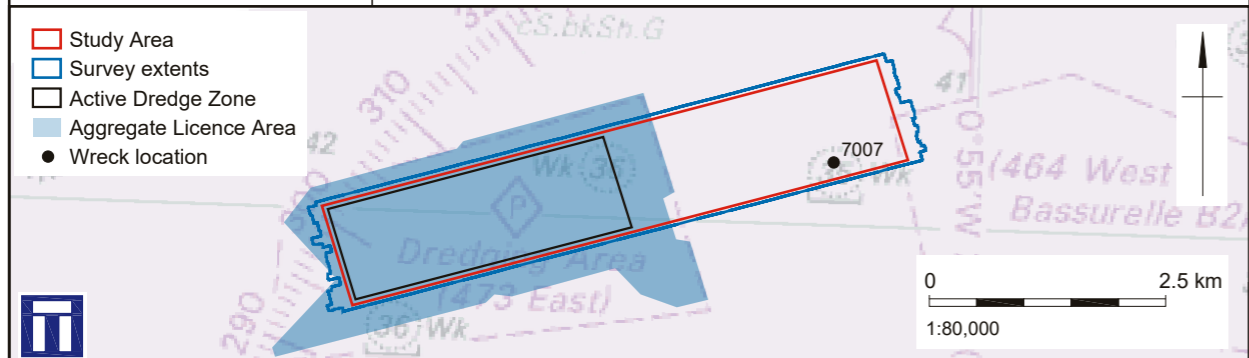
Location		321204 E, 5597865 N (WGS84 UTMz31N)	Area	Outside Licence Area
Archaeological Importance		High		
Geophysical survey dimensions and notes		<p>Dimensions: 75.5 x 21.8 x 3.6 m</p> <p>Distinct outline of a hull; visibly embedded in the seabed sediments and though appears relatively intact, numerous items of debris in the surrounding area suggest partial disintegration. Some possible deck structure visible, including two circular reflectors with height which could be boilers, and a large irregular mound, which could be further super-structure. An extensive debris field (7039) is visible along the eastern and northern extents.</p> <p>Observed in the MBES data as a distinct outline of a wreck, aligned NNE to SSW and partially embedded in surrounding seabed sediments. Some surrounding sediment build-up, particularly around the centre, which could obscure further debris.</p> <p>The wreck location is associated with two UKHO records (20342 and 20713). The report for 20713 describes the German submarine UC65, which is not consistent with this wreck. Record 20342 relates to the British steam ship SS <i>Caterham</i>; more consistent with the wreck identified within the data at this location. However, the report states that this position was dived in 1993 and the wreck was identified as an unknown, very old steel coaster.</p>		
Build	Type	Steel coaster (as confirmed by divers in 1993)		
	Construction	Unknown		
	Dimensions	Unknown		
	Shipyard	Unknown		
Loss	Cause	Unknown		
Extent of Survival		<p>The vessel appears upright and relatively intact, with a significant amount of height and structure remaining. The western extents appear almost completely buried by seabed sediments which may not only have aided preservation but also may obscure identification of further surrounding debris.</p> <p>The recorded dimensions from the 2017 data were 77.4 x 19.8 x 2.7 m. The slight decrease in length may have been caused by increasing sediment build-up. It is also possible, suggested by the increase in width, that some degradation of the internal structure is occurring; causing collapse and spread.</p>		



A sidescan mosaic of wreck 7007, 75.5 x 21.8 x 3.6 m



A multibeam echosounder image of wreck 7007, facing north, x1 vertical exaggeration



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	Path:	W:\Projects\106784\Graphics_Office\Rep figs\Monitoring\2019_02_12				



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