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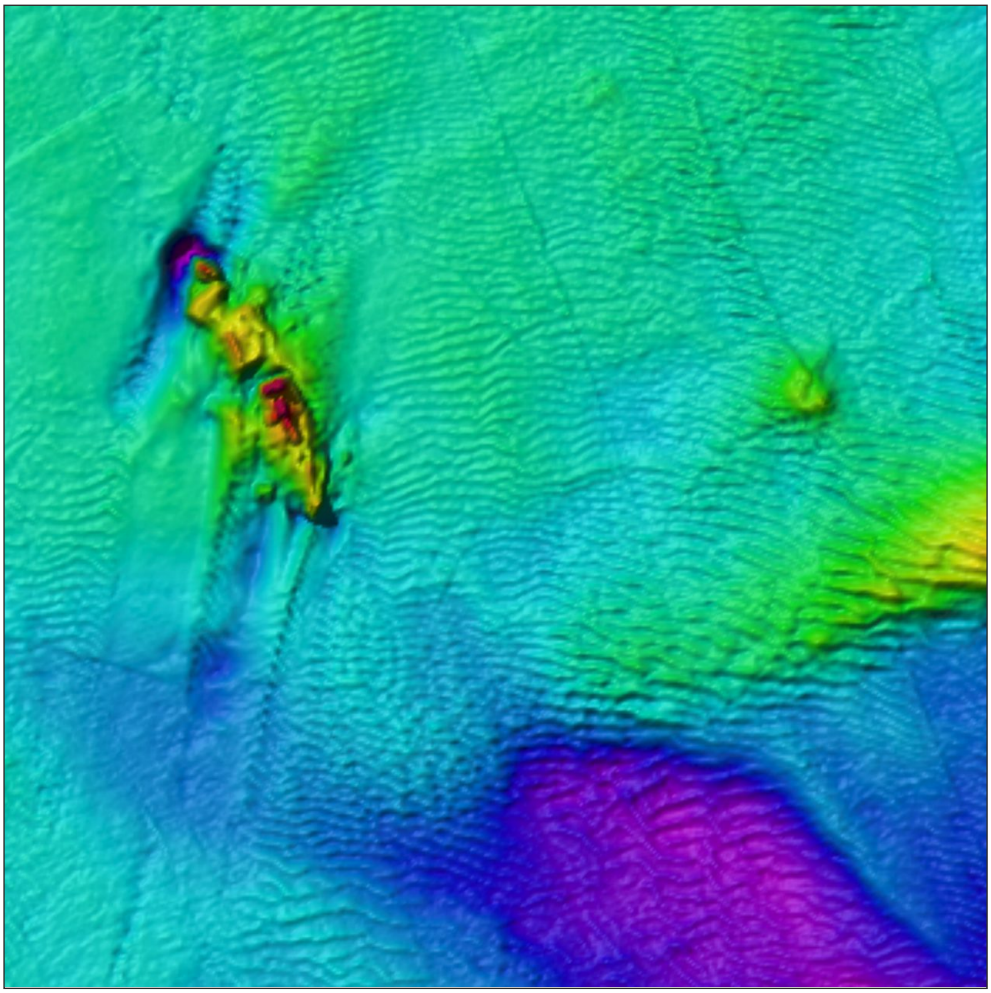
East of England Designated Wrecks:

Rooswijk Geophysical Survey Assessment



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Rooswijk Geophysical Survey Assessment

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Summary

Wessex Archaeology was commissioned by English Heritage to carry out an archaeological assessment of previously uninterpreted geophysical data acquired from an area of the East Goodwin Sands. The survey data were originally collected by Wessex Archaeology as part of the East of England Designated Wrecks project in 2009, and comprised sidescan sonar and marine magnetometer data. Additional multibeam bathymetry data, collected on behalf of the Marine Coastguard Agency as part of the Civil Hydrography Program, and acquired through the United Kingdom Hydrographic Office INSPIRE directive, were assessed.

Analysis of the data has revealed a total of 256 anomalies of archaeological potential from within the Study Area, including five potential wreck sites, six potential dispersed wreck sites and a potential cannon site, along with numerous debris fields and individual pieces of debris scattered throughout the Study Area. None of the identified potential wreck sites appear to have corresponding United Kingdom Hydrographic Office or National Record of the Historic Environment records, and so are potentially new sites. This is in addition to the 10 wreck sites already identified in the wider area during the East of England Designated Wrecks project.

Due to this lack of existing records, any further information associated with these potential wreck sites would need to be acquired by further survey and diver investigation.

An original objective of assessing any damage/sediment movement caused at the *Rooswijk* (GAD 6) site by storm events during the winter of 2013/2014 was unable to be undertaken. However, given the apparently low-lying, and potentially sensitive nature of the identified material within the Study Area, such a study would be advantageous in the future. This would aid in understanding of the effects of storm events on dispersed wreck sites over time, and possibly help determine and explain the extents of material within this area of the Goodwin Sands by assessing movement of the sands themselves over time.

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Acknowledgements

This assessment and report was commissioned by English Heritage and undertaken by Wessex Archaeology. The sidescan sonar and marine magnetometer data were originally acquired in 2009 by Cristina Serra with assistance from Stuart Churchley. The multibeam bathymetry data were originally acquired for the Maritime Coastguard Agency as part of the Civil Hydrography Program.

The original geophysical interpretation was undertaken by Cristina Serra, Pippa Jones, Ben Urmston and Patrick Dresch. The data processing and interpretation for this report was undertaken by David Howell and Patrick Dresch, and the report compiled by David Howell. Figures were produced by Kitty Foster, and the project was managed for Wessex Archaeology by Louise Tizzard.

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1 INTRODUCTION

1.1 Background

1.1.1 Wessex Archaeology (WA) was commissioned by English Heritage (EH) to carry out an archaeological assessment of previously un-interpreted geophysical data acquired from an area of the East Goodwin Sands. The survey data comprised sidescan sonar (SSS), marine magnetometer and multibeam bathymetry data.

1.1.2 WA has been the contractor to EH for the provision of archaeological services in support of the Protection of Wrecks Act (1973) (PWA) since 2003. During this time WA have undertaken both geophysical and diving investigations on numerous wreck sites in the Goodwin Sands, off the coast of Kent, both through the PWA contract and other EH funding streams.

1.1.3 One such series of investigations were undertaken by WA in 2008 as part of the services in support of the PWA, and involved relatively small area geophysical surveys over a number of wreck sites located within the Goodwin Sands (WA 2009). A similar series of investigations were undertaken by WA in 2009, funded by the Historic Environment Enabling Program (HEEP) through EH (WA 2010). Both projects included geophysical surveys (SSS and marine magnetometer) of the wreck of the *Rooswijk* (**GAD 6**), a trade vessel of the Dutch East India Company, which was lost on the Goodwin Sands in 1740. The site was designated protected wreck status in 2007.

1.1.4 The 2009 geophysical survey of **GAD 6** was a repeat of the 2008 survey. The initial survey was focussed solely on the wreck site, which was found to be more exposed during 2009 than in 2008, but favourable weather conditions in 2009 enabled the survey to be extended approximately 3km beyond the northern limits of the known wreck site in order to place the wreck within a wider context (WA 2010) (**Figure 1**). The acquired geophysical data comprised SSS and marine magnetometer data sets. An extensive scatter of debris, containing 717 individual geophysical anomalies and possibly comprising 10 separate sites in addition to the main wreck of **GAD 6**, was identified within this area (WA 2010). However, due to reporting time and budget constraints, a section of this acquired geophysical data set was not interpreted and so the extent of this debris scatter remained unknown.

1.1.5 In 2009 the area of the **GAD 6** wreck was surveyed under the Routine Resurvey Program (HI1294) of the Civil Hydrography Program (CHP) undertaken by the Marine Coastguard Agency (MCA). This data comprises a multibeam bathymetry data set, and is now available through the UKHO INSPIRE directive. This data has not previously been reviewed for archaeology or compared to previous WA interpretations from this area.

1.1.6 In 2010, as part of the PWA contract work, GAD (Goodwins and Downs) unique identifier numbers were assigned to all possible and known wrecks within the geographical area

(WA 2011). Existing GAD numbers (e.g. GAD 6 for the *Rooswijk*) have been referenced throughout this report and new GAD numbers assigned to appropriate wreck and cannon sites identified in the i2014 interpretation.

1.2 Aims and objectives

1.2.1 The aim of the assessment was to undertake an archaeological interpretation of previously un-interpreted geophysical data, acquired by WA in 2009 and as part of the CHP in 2009, in order to further understand the wider context within which the wreck of **GAD 6** is located, ascertain the extents of sites identified during previous data interpretation (WA 2010) and identify any new potential sites. The objectives were as follows:

- View and archaeologially interpret SSS and magnetometer data acquired by WA in 2009;
- View and archaeologically interpret bathymetry data acquired as part of the CHP in 2009/2010;
- Map the locations of any identified sites and anomalies of potential archaeological interest and merge with the 2009 interpretation of the Study Area;
- Use the results to inform any future work within the Study Areas.

1.2.2 A planned additional objective (as outlined in the Project Proposal, WA 2014a) was to assess the effects of storm events experienced across the Goodwin Sands area during the winter of 2013/2014 on the generally dispersed wreck sites present in the area around **GAD 6**. Oceanographic information from the Goodwin Sands area provided to WA by Dr Travis Mason of the Channel Coastal Observatory (CCO) based at the National Oceanography Centre (NOC) in Southampton indicates the area experienced a total of seven 1 in 1 year or greater storm events during the winter of 2013/2014, two of which were 1 in 5 year events and one of which was a 1 in 30 year event. The effect of such regular, severe storms on the wreck sites of the Goodwin Sands is unknown, but they have the potential to cause damage to structures and movement of wreck material, alongside significant erosion, transport and re-deposition of seabed sediment.

1.2.3 A further survey of the **GAD 6** site, to be undertaken by WA, was planned for 2014 as part of EH's Heritage at Risk (HAR) programme, and the results obtained from this survey were to be used in conjunction with the 2009 data to assess any movement of wreck material and/or sediment potentially caused by the recent severe storm events. However, due to an extended period of bad weather, the proposed 2014 survey of **GAD 6** was unable to be carried out, and so this objective of the current study could not be completed. However, the current study will still serve as a baseline interpretation should a future survey be completed and such a comparative study be commissioned.

2 METHODOLOGY

2.1 Data Sources

2.1.1 A number of data sources were utilised during this study. These included:

- Geophysical data (SSS and magnetometer) acquired by WA in 2009;
- Geophysical data (bathymetry) acquired as part of the CHP in 2009/2010;

- Previous archaeological interpretation of geophysical data undertaken by WA around the **GAD 6** area (WA 2010);
- United Kingdom Hydrographic Office (UKHO) Wreck and Obstruction Database for records of known shipwrecks and navigational hazards from historic and modern charts;
- Maritime records held by the National Record of the Historic Environment (NHRE). Including shipping and aircraft casualties and archaeological monuments and findspots;
- Modern Admiralty charts relevant to the East Goodwin Sands.

2.1.2 Any sites, either previously recorded in the above data sources, or identified during this geophysical assessment which are located outside the defined Study Area are deemed beyond the scope of works of the current project and are subsequently not included in this report.

2.1.3 The geophysical data comprised SSS, magnetometer and bathymetry datasets. Each of these were assessed for their quality and rated using the following 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 is likely to be problematic. Wooden wrecks are unlikely to be identified.

Table 1: Criteria for Assigning Data Quality Rating

2.1.4 The SSS data acquired by WA were rated as Good using the above criteria, with small objects clearly visible and only small amounts of weather noise affecting the data. The exception to this were two lines towards the east of the Study Area, which were run at a larger range and for which the data appears clipped and is much more affected by background conditions. These two lines have been rated as Variable using the above criteria.

2.1.5 The magnetometer data acquired by WA were also rated as Good using the above criteria, with very little spiking or background noise identified. However, large geological trends were identified during processing which made picking of possible archaeological anomalies difficult in some parts of the Study Area, though this was not a result of the quality of the data itself.

2.1.6 The bathymetry data acquired as part of the CHP were rated as Good using the above criteria with minimal weather or tidal effects visible in the data.

2.2 Geophysical Data – Technical Specifications

2.2.1 Geophysical data from two separate sources were used during this assessment. The SSS and magnetometer data were acquired by WA during the 23rd and 24th of May 2009 on board the survey vessel MV *Wessex Explorer*.

2.2.2 The SSS data were acquired using a Klein 3900 towfish operated at 900kHz and a range of 30m per channel (though some lines were acquired at 50m per channel). The data were digitally recorded using Klein's SonarPro software as *.xtf* files. Towfish positioning was provided using manual layback calculations applied during data processing.

2.2.3 The magnetometer data were acquired using a Marine Magnetics Explorer Overhauser magnetometer piggy-backed at a distance of 10m behind the SSS towfish and operated at 4Hz. The data were digitally recorded using HyPack software as *.txt* files.

2.2.4 The positioning for the survey was provided by a Leica 500 Trimble RTK GPS receiving corrections via satellite or a Trimble DGPS. The positioning data were recorded both within the SSS data and also within HyPack software. All positions were recorded and expressed as WGS UTM Zone 31N.

2.2.5 The bathymetry data were acquired through the UKHO INSPIRE portal and MEDIN Bathymetry Data Archive Centre (https://www.gov.uk/inspire-portal-and-medin-bathymetry-data-archive-centre) and provided to WA as a series of *.gsf* files. The data were acquired by MMT from the MV *Seabeam* and MV *Triad* using a Kongsberg EM3002D system.

2.3 Geophysical Data – Processing

2.3.1 The SSS data 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 initially scanned to give an understanding of the geological nature of the site and were then 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 SSS data is produced during this process to assess the quality of the sonar towfish positioning. The survey lines are smoothed, and the navigation corrected with the manual layback values recorded during the survey. This process allows the position of anomalies to be checked between different survey lines and for the layback values 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 magnetometer data were originally processed by WA using Geometrics MagPick software in order to identify any discreet magnetic contacts which could represent buried metallic debris or structures such as wrecks.

2.3.5 The software enables both the visualisation of individual lines of data and gridding of data to produce a magnetic anomaly map. The data were first smoothed to try and eliminate

any observed spiking. A trend was then fitted to the resulting data, and the trend values subtracted from the smoothed values. This was carried out in an attempt to remove natural variations in the data (such as diurnal variation in magnetic field strength and changes in geology). The processed data were then gridded to produce a map of magnetic anomalies, and individual anomalies tagged and images taken in a similar process to that undertaken for the SSS data. For this study, the magnetometer data were not re-interpreted and only the results of the previous data interpretation were used.

2.3.6 The bathymetry data were analysed to identify any seabed structures that could be shipwrecks or other anthropogenic debris. The data were gridded at 1m and analysed using IVS Fledermaus software, which enables 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 each other. 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 Study Area.

2.4.2 To address this fact the anomalies were grouped together along with the results of the desk-based study of known archaeological sites. This allows one ID number to be assigned to a single object for which there may be, for example, a UKHO record, a magnetic anomaly and multiple SSS anomalies.

2.4.3 Once all the geophysical anomalies 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 2: Criteria for Discriminating Archaeological Potential of Anomalies

2.4.4 All the anomalies that have been identified from within the Study Area are presented in **Appendix I** and discussed in this report.

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 for further evaluation should more information become available.

3 RESULTS

3.1 Seabed Features Assessment

3.1.1 A total of 821 SSS anomalies and 57 bathymetric anomalies were initially identified within the area covered by the geophysical data. Additionally, 55 magnetic anomalies identified during previous data interpretation were also present from within the Study Area. After anomaly grouping and discrimination as described in **Section 2.4** and removal of

anomalies located outside of the Study Area, 256 sites of archaeological potential were identified within the Study Area. These have been characterised as follows:

Archaeological Discrimination	Number of Anomalies	Interpretation
A1	52	Anthropogenic origin of archaeological interest
A2	204	Uncertain origin of possible archaeological interest
A3	0	Historic record of possible archaeological interest with no corresponding geophysical anomaly
Total	**256**	

Table 3: Anomalies of Archaeological Potential within the Study Area

3.1.2 Furthermore, these anomalies can be classified by probable type, which can aid in interpreting archaeological potential and importance:

Anomaly Classification	Number of Anomalies
Wreck	5
Dispersed Wreck	6
Cannon Site	1
Debris	111
Debris Field	51
Rope/Chain	23
Dark Reflector	48
Bright Reflector	1
Seafloor Disturbance	6
Magnetic	4
Total	**256**

Table 4: Types of Anomalies Identified within the Study Area

3.1.3 These anomalies are discussed below, and a full gazetteer supplied in **Appendix I**. For the purposes of this report, any previously identified magnetometer anomalies found to be associated with SSS anomalies were grouped together and given a new anomaly ID number. Any of these magnetometer anomalies which were not associated with SSS anomalies have retained their original anomaly ID number as reported in WA (2010). Some magnetometer anomalies which, upon further investigation using the SSS and bathymetry data, have been found to be possible natural features have been removed.

3.1.4 The distribution of all identified anomalies, from both the previous and current studies, is illustrated in **Figure 2**. The distribution appears consistent across the boundary between the two studies, indicating a relatively high level of consistency between interpretations.

3.1.5 The number of anomalies decreases rapidly to the east and north, which could be due to two separate reasons. Firstly, the data coverage is lower in these areas than across the rest of the Study Area, with only two lines of data collected along the eastern edge with areas of no data coverage between them. Secondly, it could be at least partly due to the presence of sand accumulation as shown by the bathymetry data (**Figure 3**), though this is unlikely to be the sole cause and is discussed later.

3.1.6 Also illustrated in **Figure 3** are the results of the magnetometer data processing undertaken as part of the previous study. This shows a number of generally east-west trending natural features within the Study Area which affected the identification of smaller pieces of ferrous debris. The origin of these anomalies is uncertain – they do not appear to relate to bathymetric changes, and so may be geological in origin. This is inferred from

both the bathymetry data (**Figure 3**) and the SSS mosaic (**Figure 4**), neither of which show any distinct seabed features in the area within which the magnetic anomalies are present.

3.1.7 During the grouping and discrimination of individual point features, boundaries were also created around large accumulations of anomalies (e.g. dispersed wrecks, debris fields etc.) to illustrate the extents of large groups of features that are potentially related. The distribution of these boundaries, along with the point features, is illustrated in **Figure 5** and forms the main basis for the following anomaly descriptions.

3.1.8 A total of 10 possible wreck sites have been identified within the Study Area. Of these, five contain possible coherent pieces of wreck structure and so are classified as wrecks. A further six are relatively dense concentrations of debris without visible coherent structure, but often with potential identifiable features within them (e.g. anchors, possible cannons). Alongside their WA 70000 series anomaly numbers, these possible wreck and dispersed wreck sites (including the cannon site) have been assigned a GAD series number, continuing the GAD number series presented in WA 2011.

3.1.9 One site (**70030**/**70031** (**GAD 119/GAD 120**)) contains both a wreck and dispersed wreck component, hence the total number of wreck sites totals 10 not 11. None of these have been associated with any known UKHO or NRHE records, and so can be classed as new sites. SSS data examples of all of these wrecks and dispersed wrecks are illustrated in **Figure 6** and **Figure 7**.

3.1.10 Wreck **GAD 119** was identified as a distinct mound feature within both the SSS and bathymetry data, measuring approximately 13.9m x 7.0m x 1.4m. The mound appears to comprise a large number or relatively small, rounded dark reflectors and does not appear recognisable as a vessel. The mound is also relatively small to represent a wreck in its entirety.

3.1.11 This site comprises two distinct parts – the main mound (**GAD 119**) and a surrounding area of possible dispersed wreck material (**GAD 120**,). It is possible that the mound represents a remaining pile of ballast or cargo, and the surrounding dispersed debris represents what remains of the vessel structure itself. The wreck is associated by a distinct 65nT magnetic anomaly, suggesting some ferrous material is present within the debris. A number of pieces of debris (**70023**, **70024**, **70026**, **70027**, **70029** and **70032**) have also been identified within the vicinity of **GAD 119** and are possibly related.

3.1.12 Wreck **70038** (**GAD 121**) and **70042** (**GAD 122**), located approximately 35m apart, are possibly different parts of the same wreck. Both are relatively coherent features with a structure comprising short, parallel reflectors, or possibly two series of parallel reflectors crossing at right angles. Wreck **GAD 122** appears to have a poorly defined scour extending to the north-northeast and south-southwest, and no associated magnetic anomaly was identified with either wreck suggesting they are likely to be wooden in construction.

3.1.13 Measuring approximately 8.1m x 3.9m x 0.4m (**GAD 121**) and 7.9m x 3.0m x 0.6m (**70042**), neither is large enough to represent a wreck in itself, though their similarity in appearance and possible construction indicates they could be separate sections of the same vessel. No debris field was identified between the two, though the large amount of mobile sediment in the area (they are located on the edge of an area of sand waves) could have buried any such debris.

3.1.14 Wreck **70067** (**GAD 123**) is similar in appearance to **GAD 121** and **GAD 122**, in that it is mainly characterised by a series of short, parallel reflectors. The structure does not appear as coherent as **GAD 121** and **GAD 122**, however, though it is possible that the feature is mostly buried. The structure measures approximately 14.7m x 9.2m x 0.7m and is possibly associated with a small magnetic anomaly of 14nT, suggesting a small proportion of ferrous material may be present. The structure is not large enough to represent a wreck in itself, though it could be a surviving piece of coherent debris of a once larger structure.

3.1.15 Wreck **70089** (**GAD 124**) is a very distinct, relatively isolated mound identified within both the SSS and bathymetry data. The mound measures approximately 21.7m x 7.9m x 1.4m and appears to comprise a series of relatively chaotically structured linear reflectors. A very large associated magnetic anomaly of 1039nT suggests a significant portion of the wreck is ferrous in nature.

3.1.16 As with wreck **GAD 119**, **GAD 124** is not very large and does not resemble a vessel. It is possible that the remains also represent ballast or cargo, though this is less certain in this case as no large surrounding debris field has been identified that would suggest the presence of a degraded wreck structure. However, some smaller areas of possible related debris (**70090**, **70091** and **70092**) are present. A distinct area of debris located approximately 15m to the east (**70093**) has also been identified, though it is very different in appearance to the main wreck site and is probably not related.

3.1.17 As described in **Section 3.1.8**, a further five sites (not including **GAD 120**, already described in **Section 3.3.10**) have been described as possible dispersed wreck sites. This type of site appears to be common on the Goodwin Sands (**GAD 6** itself can be classed as one), and it is certainly the case that older, wooden wrecks are more likely to be represented by dispersed wreck sites. As such, it is potentially important when trying to build a full picture of an area, and to inform future work, for this distinction to be made. SSS data examples of all of the identified dispersed wreck sites (excluding **GAD 120** illustrated in **Figure 6**) are illustrated in **Figure 7**. As with the previously described wreck sites, none of the dispersed wrecks have been associated with a known UKHO or NRHE record.

3.1.18 Sites **70109** (**GAD 125**), **70110** (**GAD 126**) and **70115** (**GAD 127**) are located close to each other and aligned approximately north-northeast – south-southwest. All are areas of scattered dark and bright reflectors including numerous short linear features, possibly indicating wooden beams/planking or cannons, though this is difficult to say for certain from the geophysical data. No remaining coherent structure has been identified, though the debris potentially represents dispersed wreck remains. No magnetic anomaly has been identified associated with these three sites, so the debris is likely to be non-ferrous in nature.

3.1.19 The three sites together measure approximately 90m x 18m so it is possible they all relate to the same wreck, though there are distinct gaps between the sites hence they have been recorded separately.

3.1.20 Site **70157** (**GAD 128**) is a distinct, relatively concentrated area of debris measuring approximately 45.2m x 28.3m, with the tallest single feature up to 0.4m in height. The debris is irregular and contains linear anomalies and a possible anchor, though no coherent pieces of structure have been identified. Some other pieces of debris have been identified within the vicinity, including a second possibly related debris field (**70156**) and a distinct, short linear dark reflector (**70152**). No magnetic anomaly was identified associated with the wreck, so any debris is likely to be mostly non-ferrous in nature.

3.1.21 Site **70178** (**GAD 129**) is relatively similar in appearance to **GAD 128**, though located approximately 140m northwest and unlikely to be related. This too comprises a scatter of irregular debris including linear features, with some smaller pieces of surrounding possibly associated debris identified. **GAD 129** also has a large, linear feature (**70177**) running approximately north - south across it, though this is interpreted as an unconnected feature, deposited at the site at a later date, and is described in more detail below. The site measures approximately 38.6m x 21.9m with the tallest feature measuring 0.4m in height, and is possibly associated with a small magnetic anomaly of 10nT suggesting a relatively small amount of ferrous material is present.

3.1.22 A further site (**70235**, **GAD 130**) has been identified that is not a wreck or dispersed wreck but is likely to be of higher archaeological significance than a debris field. It comprises a concentration of seven distinct, short, linear dark reflectors with distinct shadows all with very similar appearances and dimensions. A further five very similar anomalies (**70230**, **70231**, **70232**, **70233** and **70234**) are located within the vicinity of the main concentration.

3.1.23 These have been interpreted as possible cannons, and so **GAD 130** is classified as a cannon site. No surrounding debris has been identified to suggest the presence of a degraded wreck structure, and so any wreck that may once have existed at this location is likely to have disintegrated, been transported away by currents, or both. The site has been associated with a large 115nT magnetic anomaly which could either result from the cannons themselves or represent remaining ferrous debris buried in the vicinity.

3.1.24 A total of 111 anomalies have been classified as individual pieces of debris, with a further 51 anomalies classified as debris fields. The difference between the two is that debris represents individual anomalies or features, whilst debris fields comprise numerous anomalies scattered over either a small or wider area. The debris fields differ from dispersed wreck sites in that they have a lower concentration of generally smaller material. Examples of a number of these features are illustrated in **Figure 8**.

3.1.25 The majority of the debris and debris fields are interpreted as being non-ferrous in nature, though nine pieces of debris (**70012**, **70014**, **70021**, **70026**, **70029**, **70086**, **70130**, **70229**, **70230**) and nine debris fields (**70060**, **70087**, **70095**, **70149**, **70216**, **70222**, **70228**, **70242** and **70245**) have been associated with magnetic anomalies ranging in amplitude from 9nT (**70130**) to 421nT (**70216**). These are interpreted as being at least partially ferrous in nature.

3.1.26 Six possible anchors have been identified within the data (**70012**, **70014**, **70021**, **70048**, **70060** and **70098**), and have been classified along with the debris and debris fields (examples illustrated in **Figure 8**). One (**70012**) appears to have a length of rope or chain (**70013**) still attached. Most of these are associated with a magnetic anomaly, though **70048** and **70098** are not. This is possible due to the survey lines not passing directly over these features during the survey.

3.1.27 Another possible, though very poorly defined, anchor (**70011**) has been identified at the end of a possible long length of rope or chain (**70010**). This feature appears as a dark reflector at the eastern end of **70010**, suggesting the length of rope or chain is possibly still attached to the seabed.

3.1.28 A number of the identified pieces of debris are relatively short linear features of the order of a few metres long (examples illustrated in **Figure 8**). They are often, though not always, associated with seafloor disturbances, with either scour or sediment piling around the features identified. Five of these features (**70168**, **70169**, **70170**, **70171** and **70175**) have been described as possible cannons. None of these are associated with a magnetic

anomaly, and they do not appear as distinct as those identified associated with the possible Cannon Site (**GAD 130**) so are classified as debris.

3.1.29 Two of the debris anomalies (**70154** and **70186**) are circular with a possible hole in the centre and could be tyres, though this is uncertain. The remaining pieces of debris are generally distinct, point, elongated or short linear dark reflectors and cannot be identified definitively, though are likely to be of anthropogenic origin. The full list and descriptions of all debris and debris fields are presented in **Appendix I**.

3.1.30 A total of 23 anomalies have been classified as possible lengths of rope or chain. These are generally relatively long, curvilinear dark reflectors with or without small acoustic shadows and without associated magnetic anomalies. Many of these are isolated features though two (**70010** and **70013**) appear to be attached to possible anchors.

3.1.31 Seven of the rope or chain anomalies (**70018**, **70028**, **70068**, **70103**, **70151**, **70177** and **70246**) appear to align as a single, intermittent feature which starts in the southeast corner of the Study Area and curves across the centre to the northern end (**Figure 5**). These features have all been recorded as separate possible lengths of rope or chain in their own right (examples illustrated in **Figure 8**), though their alignment suggests they could represent sections of a partially buried cable. However, no cable, either active or disused, is known to be present within the Study Area so the exact nature of these features remains unknown.

3.1.32 A total of 48 of the identified anomalies were classified as dark reflectors. These are generally relatively poorly defined features with or without acoustic shadows and without an associated magnetic anomaly. Their nature is more ambiguous, and they could be either small pieces of non-ferrous debris or natural features. The full list and descriptions of all dark reflectors are presented in **Appendix I**.

3.1.33 A single bright reflector (**70074**) was identified within the Study Area. This is a short, elongate feature without an associated magnetic anomaly, and could represent debris which absorbs acoustic waves (e.g. synthetic material, saturated wood) or be a natural feature.

3.1.34 Six areas of seafloor disturbance (**70075**, **70080**, **70096**, **70126**, **70199** and **70204**) were also identified within the Study Area. These are areas of disturbance which do not have any immediately apparent cause or contain distinct features that could be debris. Each could be a natural feature, or represent debris buried just below the seabed. **70096** was possibly associated with a 22nT magnetic anomaly, and so could indicate at least partially ferrous debris at this location. If any debris is present at the other locations, it is likely to be non-ferrous.

3.1.35 Four previously identified magnetic anomalies (**7717**, **7725**, **7740** and **7774**) located within the Study Area were found not to correspond with any identified SSS anomalies or natural seabed features (e.g. sand waves). These range from 8nT (**7717**) to 39nT (**7774**) in amplitude, and possibly represent small pieces of buried ferrous debris.

4 DISCUSSION

4.1 Study Area Results

4.1.1 As described in **Section 3**, interpretation of the 2009 geophysical data from within the Study Area has identified a number of anomalies of archaeological potential, including 10 potential wreck sites (both partially intact and dispersed) and one potential cannon site.

None of these sites appear to have been previously reported within the UKHO or NRHE records.

4.1.2 This, in addition to the 10 sites identified during the previous interpretation of geophysical data from the larger area (including **GAD 6**, WA 2010), indicates a high concentration of relatively dispersed wreck sites are present within this area of the Goodwin Sands.

4.1.3 The fact that most of the identified sites appear to be dispersed creates problems with their successful identification, mapping and further investigation. Even the sites identified as wrecks rather than dispersed wrecks appear to mainly consist of mounds of remaining ballast or cargo, or relatively small intact sections of structure rather than whole wrecks in themselves. This creates difficulties in identification of such sites, as the distinction between what constitutes a dispersed wreck and a debris field is very much open to debate.

4.1.4 However, the results of both the previous interpretation (WA 2010) and the interpretation of the current Study Area indicate that it is exactly this kind of dispersed site that is dominant across this section of the Goodwin Sands. The identification of a number of isolated possible anchors and cannons, alongside the potential cargo mounds, potentially points to previous wreck sites at which the lighter, wooden structure has disintegrated and/or been transported away whilst the heavier elements have remained (though in the case of anchors they could have been individual features left by vessels).

4.1.5 One way to consider such large areas of scattered, possibly overlapping sites may be to view them as a landscape rather than individual features. This approach has been investigated in a recent study by WA (and funded by EH), and involves mapping the outer boundaries of all identified anomalies to create a landscape-scale site, within which smaller inter-site features (i.e. wrecks and debris fields) can be mapped (WA 2014b). The advantage of this approach is that it creates a larger area within which dispersed wreck material could be scattered, instead of putting individual boundaries around small, possible wreck sites which may infer nothing of particular interest lies between them.

4.1.6 Analysing the distribution of identified anomalies clearly shows the number of anomalies decreases rapidly towards the east and north of the Study Area, though comparison with the bathymetry data does no really indicate why this would be the case.

4.1.7 In the southeast corner, a number of sand waves are present which indicates material could be buried in this area, and so not visible in the SSS data. Therefore, there is the potential in this area for more buried material to exist beneath the seabed sediment. However, further north along the eastern edge, the seabed sediment appears to thin significantly and yet there is still a lack of identified anomalies. This could in part be due to reduced data coverage in this area relative to the west of the Study Area, though this is unlikely to be the only cause. However, bathymetry data also sees a reduction in anomalies in this area, although it should be noted that small features, with no substantial height may not be identified. This is also true for the magnetometer data which shows a reduction in anomalies indicative of less ferrous material, though relatively deep burial of material could also have this effect.

4.1.8 Given that the Goodwin Sands are notoriously mobile and difficult to map, it is possible that the area of sand waves located within the southeast corner originally extended further north, and that the lack of identified anomalies in this area could be a result of debris being transported away as the sand has moved.

4.1.9 The bathymetry data also indicates that where there are no sand waves there is also a much thinner cover of seabed sediment. This potentially accounts for the corresponding lack of magnetic anomalies in these areas, as the potential for debris to be buried in the thinner sediment is lower.

4.2 Data Set Comparisons

4.2.1 As explained in **Section 1.2**, one of the original objectives of the project was to acquire new geophysical data across the **GAD 6** wreck site and immediate surrounding area, to assess the impact of any change in the condition of the site that may have resulted from the severe storms experienced during the winter of 2013/2014. As has also been explained, this acquisition of data was unable to happen due to poor weather conditions experienced during the proposed survey time.

4.2.2 However, the multibeam bathymetry data acquired for the CHP was interpreted, and comparisons can be made between this data set and the SSS data in order to assess the suitability of both data sets for the purposes of such monitoring programs and identifying new wreck sites on the Goodwin Sands.

4.2.3 Comparison of the bathymetry data with both the previous and current SSS interpretation results indicates relatively few sites can be identified in the bathymetry data relative to the SSS. Even the known site of **GAD 6** shows only as a small mound within the bathymetry data, which, depending on the background geology, would in some areas be described as a natural feature. Only the mounds at sites **GAD 119** and **GAD 124** display any real anomaly within the current Study Area. However, more structure and detail can be identified within the SSS data, such as linear features potentially representative of wooden planking, which shows the small mound to actually represent the remains of a wreck (**Figure 10**).

4.2.4 The reason for this is linked to what was previously discussed in **Section 4.1**, in that most of the identified potential wreck sites appear to be dispersed rather than coherent structures, and as such are unlikely to be detected by bathymetric surveys alone. In these cases, SSS is essential for such sites to be identified as it can image much smaller pieces of debris that are low-lying on the seabed.

4.2.5 In contrast any larger sites, such as the possible wreck of the *Salina* (**GAD 56**) approximately 190m west of **GAD 6**, are very clearly identified within the bathymetry data and a better overall overview of their extent and condition, especially the large associated scour, can be viewed using this data set (**Figure 10**).

4.2.6 From the point of view of monitoring large areas for large scale changes, such as those potentially caused by storm events, bathymetry data is also likely to be a better tool than SSS. As also discussed in **Section 4.1**, it is possible that the area of sand waves visible in the southeast corner of the Study Area once extended further north. Large scale changes of this type would be easier to observe using bathymetry data. However, the effects of storms on individual dispersed sites would need to be assessed using SSS data, and a combination of both bathymetry and SSS datasets would provide the best results for surveys in this type of area where low-lying wreck material is set within a background environment characterised by large-scale changes.

5 CONCLUSIONS

5.1.1 A total of 11 potential wreck and dispersed wreck sites, including a potential cannon site, have been identified within the SSS data in addition to the 10 sites identified during the

previous data interpretation (WA 2010). Although these sites are mainly dispersed in nature, and as such relatively difficult to identify and map definitively, they do represent a large concentration of wreck material over a relatively small area.

5.1.2 As none of the identified sites appear to correlate with any known UKHO or NRHE wreck locations, there is little other evidence to use to suggest what these sites are, or infer their possible importance. As such, further ground-truthing investigations (in particular diving) would need to be undertaken to help ascertain the identity and potential archaeological importance of these sites, and help distinguish between scattered debris fields and possible dispersed wrecks.

5.1.3 As the data interpreted for this report dates to 2009/2010, and since it is likely that a significant amount of sediment, and possibly wreck material, has moved within the Study Area since the data were acquired, due in part to the severe storm events experienced during the winter of 2013/2104, it is possible that the distribution of material at the current time is different from that reported here. As such, it may be advantageous for any future ground-truthing investigation to be preceded by a geophysical investigation to ascertain the basic current condition of targeted sites.

5.1.4 In addition, the use of large scale multibeam bathymetry data could, with respect to cyclic episodes of sediment build up and erosion in certain areas, aid in understanding the relationship between the movement of the Goodwin Sands over time and the distribution of wreck material, if any exists. This could aid in defining the potential boundaries of landscape-scale archaeological sites within the Goodwin Sands, alongside monitoring the condition of larger, more coherent wreck sites in the area. Due to the combination of low-lying, dispersed wrecks and large-scale background sedimentary changes within the Goodwin Sands, a combination of using both SSS and bathymetry data sets is considered the best approach for this type of work.

6 REFERENCES

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7 APPENDIX I – ANOMALIES OF ARCHAEOLOGICAL POTENTIAL

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
7717	-	Magnetic	400608	5682897	A2	-	-	-	8	Small but distinct magnetic anomaly without an associated sidescan sonar contact. Possible small piece of buried ferrous debris, possibly related to cannon site **70235** (**GAD 130**)**.**
7725	-	Magnetic	400587	5682807	A2	-	-	-	9	Small but distinct magnetic anomaly without an associated sidescan sonar contact. Possible small piece of buried ferrous debris.
7740	-	Magnetic	400916	5682726	A2	-	-	-	10	Small but distinct magnetic anomaly without an associated sidescan sonar contact. Possible small piece of buried ferrous debris.
7774	-	Magnetic	400891	5681867	A2	-	-	-	39	Distinct magnetic anomaly without an associated sidescan sonar contact. Possible buried piece of ferrous debris.
70000	-	Debris	400857	5681614	A2	2.7	0.2	0.1	-	Short, curvilinear dark reflector with distinct shadow but no associated magnetic anomaly. Possible debris, though could be a stretched natural feature.
70001	-	Debris Field	400872	5681630	A1	7.3	2.4	0.5	-	Area containing at least two crossing, short, linear dark reflectors with distinct shadows, but no associated magnetic anomaly. Possible debris field containing non-ferrous material. Height measurement is of tallest single anomaly.
70002	-	Dark Reflector	400877	5681650	A2	0.3	0.2	0.2	-	Small dark reflector with shadow but no associated magnetic anomaly, could be natural or non-ferrous debris.
70003	-	Dark Reflector	400878	5681653	A2	0.7	0.2	0.1	-	Small dark reflector with shadow and possible small scour but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70004	-	Debris	400902	5681650	A2	0.7	0.4	0.3	-	Distinct dark reflector with large shadow but no associated magnetic anomaly, possible piece of non-ferrous debris.
70005	-	Debris	400921	5681760	A2	3.0	0.2	0.3	-	Small, curvilinear dark reflector with small shadow but no associated magnetic anomaly, only identified on one survey line. Possible piece of non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70006	-	Debris	400832	5681855	A2	2.3	0.2	0.2	-	Short, linear dark reflector with small shadow, but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70007	-	Dark Reflector	400796	5681897	A2	2.4	0.4	0.2	-	Short, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris, though could be a natural feature.
70008	-	Debris	400800	5681919	A2	1.8	0.2	0.0	-	Elongate reflector with small scour but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70009	-	Debris	400799	5681914	A2	1.4	0.4	0.0	-	Elongate reflector with small scour but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70010	-	Rope / Chain	400764	5681951	A2	73.7	0.4	0.0	-	Long, curvilinear, east-west trending dark reflector without a shadow or associated magnetic anomaly. Located mostly outside of the study area, but a small section at the eastern end is within the study area. Possible length of rope or chain, possibly still attached to the seabed by debris **70011**.
70011	-	Debris	400797	5681950	A2	2.2	0.3	0.0	-	Elongate dark reflector without shadow or associated magnetic anomaly, located at the eastern end of rope / chain feature **70010.** Possible debris/anchor attaching rope to seabed.
70012	-	Debris	400797	5681938	A1	2.6	0.2	1.3	187	Distinct short, linear dark reflector with irregular shadow and large associated magnetic anomaly. Shadow is partially detached, suggesting feature stands partially above the seabed. Probably piece of ferrous debris, possible anchor standing proud of the seabed. Length of rope or chain **(70013)** identified extending for the feature.
70013	-	Rope / Chain	400804	5681938	A1	11.9	0.1	0.0	-	Curvilinear dark reflector without a shadow extending east from possible anchor **70012.** Possible length of associated rope or chain.
70014	-	Debris	400793	5681973	A1	3.1	1.9	0.4	278	Distinct dark reflector with shadow and large associated magnetic anomaly. Probable ferrous debris, possible anchor.
70015	-	Debris Field	400771	5681971	A2	6.1	2.8	0.1	-	At least two, closely spaced elongate dark reflectors with shadows but no associated magnetic anomaly. Possible small area of partially buried non-ferrous debris. Height measurement is of tallest single anomaly.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70016	-	Debris	400823	5681951	A2	0.8	0.5	0.3	-	Irregular, slightly elongate dark reflector with shadow and possible indication of structure, though no associated magnetic anomaly. Possible piece of non-ferrous debris.
70017	-	Debris	400845	5681950	A2	1.6	0.5	0.3	-	Poorly defined slightly elongate dark reflector with distinct shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70018	-	Rope / Chain	400836	5681969	A2	14.0	0.2	0.1	-	Intermittent, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Possible partially buried length of rope or chain.
70019	-	Debris Field	400822	5682004	A2	9.7	2.9	0.0	-	Small, approximately oval-shaped area of poorly defined, elongate bright reflectors. No associated magnetic anomaly. Possible area of partially buried non-ferrous debris.
70020	-	Debris	400746	5682010	A2	1.9	0.7	0.5	-	Elongate dark reflector with shadow and small scour, though without an associated magnetic anomaly. Possible piece of non-ferrous debris.
70021	-	Debris	400728	5682055	A1	4.7	3.2	0.6	37	Distinct dark reflector with small shadow and associated magnetic anomaly. Probable piece of ferrous debris, possible anchor.
70022	-	Debris Field	400743	5682037	A2	40.3	20.0	0.5	-	Large area of relatively small, scattered, irregular dark reflectors with shadows and bright reflectors. No associated magnetic anomaly. Could be an area of partially buried non-ferrous debris, or an area of natural features. Height measurement is of tallest single anomaly.
70023	-	Debris	400764	5682039	A1	2.3	0.6	0.3	-	Distinct short, linear dark reflector with shadow and small scour but without an associated magnetic anomaly. Probable debris, possibly associated with wreck **70030** (**GAD 119**)**.**
70024	-	Debris	400763	5682073	A1	2.3	0.4	0.3	-	Distinct short, linear dark reflector with shadow and small scour but without an associated magnetic anomaly. Probable debris, possibly associated with wreck **70030** (**GAD 119**)**.**
70025	-	Rope / Chain	400774	5682056	A2	12.5	0.1	0.1	-	Intermittent, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Possible partially buried length of rope or chain.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70026	-	Debris	400789	5682025	A1	3.1	0.5	0.3	20	Distinct, short linear dark reflector with shadow and distinct scour. associated with a relatively small magnetic anomaly. Probable piece of ferrous debris, possibly associated with wreck **70030** (**GAD 119**)**.**
70027	-	Debris	400792	5682037	A1	1.9	0.3	0.3	-	Distinct, elongate dark reflector with distinct irregular shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris, possibly associated with wreck **70030** (**GAD 119**)**.**
70028	-	Rope / Chain	400809	5682031	A2	55.9	0.1	0.0	-	Long, intermittent, curvilinear dark reflector with small shadow extending approximately southeast from wreck **70030** (**GAD 119**)**.** No associated magnetic anomaly. Could be a length of rope or chain, either associated with the wreck or snagged on the structure at a later date.
70029	-	Debris	400790	5682060	A1	3.0	0.4	0.3	10	Distinct, short linear dark reflector with shadow and distinct scour. associated with a relatively small magnetic anomaly. Probable piece of ferrous debris, possibly associated with wreck **70030** (**GAD 119**)**.**
70030	GAD 119	Wreck	400798	5682082	A1	13.9	7.0	1.4	65	Distinct mound of rounded dark reflectors showing significant height, surrounding on three sides by dispersed wreck **70031** (**GAD 120**)**.** Associated with a distinct magnetic anomaly, though it is too small for the whole structure to be ferrous so it is likely to contain a mixture of ferrous and non-ferrous material. Recorded here as a potential wreck, though the mound itself is too small to likely represent the whole wreck itself. It is possible that this mound represents the remains of cargo or ballast, and the surrounding debris field represents the remains of the wreck structure. No associated UKHO/NRHE record.
70031	GAD 120	Dispersed Wreck	400799	5682091	A1	31.2	22.1	0.3	65	Scattered area of irregular dark reflectors with shadows and bright reflectors surrounding the east, west and north of possible wreck **70030** (**GAD 119**)**.** Possibly represents the dispersed remains of a wreck structure with **70030** (**GAD 119**) being cargo or ballast. Possible magnetic anomaly, though it is uncertain whether this is related to the main wreck, the debris or both. Height measurement taken from tallest feature.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70032	-	Debris	400809	5682083	A1	1.8	0.3	0.3	-	Distinct, short, linear dark reflector with shadow and associated small area of seafloor disturbance. Located on the eastern edge of dispersed wreck **70031** (**GAD 120**). No associated magnetic anomaly, though any anomaly would be masked by nearby wreck **70030** (**GAD 119**). Probable piece of debris, possibly associated with the wreck.
70033	-	Debris Field	400828	5682066	A2	5.8	3.9	0.3	-	Distinct area of rounded dark reflectors with shadows and possible small area of seafloor disturbance. No associated magnetic anomaly. Possible debris field, possibly related to wreck 6199 though this is uncertain. Height measurement taken from tallest feature.
70034	-	Rope / Chain	400833	5682076	A2	6.6	0.2	0.1	-	Intermittent, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Possible partially buried length of rope or chain.
70035	-	Debris	400840	5682085	A2	3.4	0.8	0.0	-	Distinct elongate bright reflector with associated scour but no magnetic anomaly. Possible piece of non-ferrous debris.
70036	-	Debris Field	400845	5682096	A2	3.2	1.9	0.0	-	Two crossing short, linear bright reflectors with possible small area of seafloor disturbance. No associated magnetic anomaly. Possible small area of non-ferrous debris.
70037	-	Rope / Chain	400861	5682033	A2	4.0	0.1	0.1	-	Short, curvilinear dark reflector with small shadow. Possible short length of rope or chain.
70038	GAD 121	Wreck	400866	5682052	A1	8.1	3.9	0.4	-	Rounded area of small, curved, parallel bright reflectors with a possible cross-hatch pattern. Possible wreck remains - not large enough to be a wreck in itself, but is possibly a partially buried piece of coherent wreck structure. Possibly associated with wreck **70042** located approximately 35m to the NE. No associated magnetic anomaly, so any remains are likely to be non-ferrous.
70039	-	Dark Reflector	400873	5682062	A2	1.2	0.2	0.3	-	Dark reflector with shadow but no associated magnetic anomaly. Could be natural or non-ferrous debris
70040	-	Debris Field	400883	5682053	A1	1.9	1.9	0.0	-	Small area of short, linear bright reflectors without an associated magnetic anomaly. Possible small area of non-ferrous debris, possibly related to potential wreck sites **70038** (**GAD 121**) and **70042** (**GAD 122**).

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70041	-	Debris Field	400884	5682058	A1	3.0	1.7	0.0	-	Small area of short, linear bright reflectors without an associated magnetic anomaly. Possible small area of non-ferrous debris, possibly related to potential wreck sites **70038** (**GAD 121**) and **70042** (**GAD 122**)**.**
70042	GAD 122	Wreck	400894	5682074	A1	7.9	3.0	0.6	-	Elongate area of small, curved, parallel bright reflectors with a possible cross-hatch pattern. Possible wreck remains - not large enough to be a wreck in itself, but is possibly a partially buried piece of coherent wreck structure. Possibly associated with wreck **70038** (**GAD 121**) located approximately 35m to the SW. No associated magnetic anomaly, so any remains are likely to be non-ferrous.
70043	-	Debris	400545	5681961	A2	1.3	0.6	0.0	-	Elongate dark reflector without shadow or associated magnetic anomaly. Appears to have a small scour and possible sediment piled around it. Possible partially buried non-ferrous debris.
70044	-	Dark Reflector	400542	5681987	A2	1.2	0.5	0.2	-	Dark reflector with shadow but no associated magnetic anomaly, identified on a number of survey lines. Could be natural or a piece of non-ferrous debris.
70045	-	Debris	400553	5681984	A2	2.3	0.1	0.2	-	Irregular, elongate dark reflector with distinct shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70046	-	Rope / Chain	400638	5682090	A2	38.6	0.2	0.2	-	Intermittent, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Possible partially buried length of rope or chain. Trends approximately NE-SW, and curves round at its SW end to form a small area of debris.
70047	-	Debris	400558	5682156	A2	0.9	0.7	0.5	-	Elongate dark reflector with shadow but no associated magnetic anomaly. Small area of surrounding seafloor disturbance and scour. Possible piece of non-ferrous debris.
70048	-	Debris	400556	5682204	A1	2.5	1.8	0.3	-	Distinct, irregular dark reflector with shadow, possible piece of debris. No associated magnetic anomaly, though shape of feature suggests it is a possible anchor.
70049	-	Debris	400591	5682120	A2	3.4	0.3	0.1	-	Short, linear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70050	-	Debris	400597	5682119	A2	3.0	0.3	0.0	-	Short, linear dark reflector without shadow or associated magnetic anomaly, but with associated scour. Sediment appears to be piled up around it. Possible piece of non-ferrous debris.
70051	-	Debris	400603	5682118	A2	6.3	0.2	0.1	-	Short, linear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70052	-	Debris	400585	5682174	A2	3.2	1.9	0.6	-	Large, distinct dark reflector with shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70053	-	Debris	400599	5682221	A2	1.5	0.4	0.5	-	Small dark reflector with shadow, located within a small area of seafloor disturbance with associated scour. No magnetic anomaly. Possible piece of non-ferrous debris.
70054	-	Debris	400618	5682184	A2	2.1	0.5	0.4	-	Short, linear dark reflector with shadow, located in an area of seafloor disturbance with associated scour. No magnetic anomaly. Possible piece of non-ferrous debris.
70055	-	Debris	400628	5682218	A2	6.5	0.2	0.0	-	Thin, curvilinear dark reflector with small possible scour at each end. No shadow or associated magnetic anomaly. Possible piece of partially buried non-ferrous debris.
70056	-	Debris	400641	5682226	A2	4.2	0.1	0.0	-	Short, linear dark reflector without a shadow or associated magnetic anomaly. Possible piece of non-ferrous debris.
70057	-	Debris Field	400658	5682120	A2	4.2	2.6	0.2	-	Small area of irregular dark reflectors with shadows but no associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70058	-	Debris Field	400655	5682138	A2	8.4	2.9	0.3	-	Small area of irregular dark reflectors with shadows but no associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70059	-	Debris	400664	5682139	A2	2.2	0.4	0.4	-	Distinct dark reflector with shadow and small area of seafloor disturbance, though no associated magnetic anomaly. Possible piece of non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70060	-	Debris Field	400670	5682216	A1	7.0	4.2	0.4	32	Area of irregular bright reflectors and dark reflectors with shadows, with a possible relatively small associated magnetic anomaly. Possible debris field containing partially ferrous debris, possible anchor. Height measurement taken from tallest feature.
70061	-	Debris Field	400673	5682227	A2	4.2	2.8	0.3	-	Area of irregular bright reflectors and dark reflectors with shadows, but without an associated magnetic anomaly. Possible area of partially buried non-ferrous debris.
70062	-	Debris	400713	5682177	A1	2.2	0.7	0.8	-	Distinct, irregular dark reflector with irregular, partially detached shadow. Probable piece of debris. No associated magnetic anomaly, though shape of feature suggests it could be an anchor.
70063	-	Dark Reflector	400715	5682196	A2	1.2	0.4	0.3	-	Dark reflector with shadow but no associated magnetic anomaly. Could be natural or a piece of non-ferrous debris.
70064	-	Debris	400732	5682189	A2	5.5	0.2	0.1	-	Irregular, elongate dark reflector with small shadow and associated seafloor disturbance. No magnetic anomaly. Possible piece of partially buried non-ferrous debris.
70065	-	Dark Reflector	400750	5682141	A2	0.7	0.2	0.3	-	Small dark reflector with shadow and possible small scour but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70066	-	Dark Reflector	400750	5682136	A2	0.6	0.4	0.1	-	Small dark reflector with shadow and possible small scour but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70067	GAD 123	Wreck	400780	5682143	A1	14.7	9.2	0.7	14	Area of irregular bright reflectors with shadows, with a number of smaller, parallel reflectors observed extending from a larger, curved anomaly. Possibly associated with a small magnetic anomaly, though this is uncertain. Probable debris, possible partially buried wreck remains, though dimensions indicate it is possibly not an entire wreck.
70068	-	Rope / Chain	400777	5682120	A2	23.7	0.1	0.1	-	Intermittent, curvilinear dark reflector with small shadow extending to the SE from possible wreck **70067** (**GAD 123**). Possible length of rope or chain. Could be directly related to the wreck, or be debris snagged on the structure at a later date.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70069	-	Dark Reflector	400807	5682126	A2	0.8	0.2	0.2	-	Small, elongate dark reflector with shadow but without an associated magnetic anomaly. Could be natural or a piece of non-ferrous debris.
70070	-	Rope / Chain	400811	5682125	A2	4.2	0.1	0.1	-	Intermittent, poorly defined dark reflector with small shadow but without an associated magnetic anomaly. Possible partially buried length of rope or chain.
70071	-	Debris	400821	5682108	A2	3.0	0.5	0.1	-	Short, linear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris. Located adjacent to similar feature **70072,** possibly related to wreck **70030** (**GAD 119**) though this is uncertain.
70072	-	Debris	400825	5682108	A2	2.7	0.2	0.2	-	Short, linear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris. Located adjacent to similar feature **70071,** possibly related to wreck **70030** (**GAD 119**) though this is uncertain.
70073	-	Debris	400775	5682238	A2	0.6	0.6	0.4	-	Distinct, dark reflector with shadow and small area of associated seafloor disturbance. No associated magnetic anomaly, but possibly a piece of non-ferrous debris.
70074	-	Bright Reflector	400797	5682174	A2	1.7	0.6	0.0	-	Short, linear bright reflector without a shadow or associated magnetic anomaly. Could be a piece of non-ferrous debris or a natural feature.
70075	-	Seafloor Disturbance	400803	5682172	A2	5.6	2.0	0.1	-	Small area of seafloor disturbance without an associated magnetic anomaly. Poorly defined, and could be a natural feature or represent shallow buried debris. Height measurement taken from tallest anomaly.
70076	-	Debris	400834	5682146	A2	0.4	0.4	0.5	-	Distinct dark reflector with large shadow but no associated magnetic anomaly, possible piece of non-ferrous debris.
70077	-	Debris	400869	5682115	A2	3.3	0.1	0.1	-	Short, linear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70078	-	Debris Field	400885	5682124	A2	7.4	2.0	0.5	-	Small area of linear dark and bright reflectors with surrounding seafloor disturbance. No associated magnetic anomaly. Possible small area of non-ferrous debris. Height measurement taken from tallest anomaly.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70079	-	Dark Reflector	400861	5682137	A2	0.6	0.5	0.1	-	Distinct dark reflector with small shadow but no associated magnetic anomaly. Possible small scour. Could be natural or a piece of non-ferrous debris.
70080	-	Seafloor Disturbance	400859	5682146	A2	4.1	2.0	0.0	-	Small area of seafloor disturbance without an associated magnetic anomaly. Poorly defined, and could be a natural feature or represent shallow buried debris.
70081	-	Debris	400865	5682162	A2	0.5	0.6	0.3	-	Distinct, circular dark reflector with shadow and small scour, but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70082	-	Debris	400892	5682163	A2	1.1	0.3	0.2	-	Distinct, irregular dark reflector with shadow and small area of surrounding seafloor disturbance. No associated magnetic anomaly. Possible piece of non-ferrous debris.
70083	-	Dark Reflector	400897	5682177	A2	2.4	0.3	0.2	-	Poorly defined, elongate dark reflector with small shadow but no associated magnetic anomaly. Could be a natural feature or scar, though was identified on a number of survey lines and could be non-ferrous debris.
70084	-	Dark Reflector	400837	5682208	A2	0.9	0.3	0.4	-	Distinct dark reflector with small shadow but no associated magnetic anomaly. Possible small scour. Could be natural or a piece of non-ferrous debris.
70085	-	Dark Reflector	400866	5682202	A2	1.2	0.2	0.2	-	Elongate dark reflector with small shadow but no associated magnetic anomaly. Could be natural or a piece of non-ferrous debris.
70086	-	Debris	400884	5682222	A2	1.0	0.3	0.7	161	Small but distinct dark reflector with large shadow, associated with a large magnetic anomaly. Possible piece of ferrous debris.
70087	-	Debris Field	400931	5682211	A2	6.1	4.6	0.0	16	Small area of very poorly defined curvilinear dark reflectors, possible associated with a small magnetic anomaly. Possible area of partially buried partially ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70088	-	Debris Field	400557	5682274	A1	23.4	10.6	0.4	-	Irregular area of scattered dark and bright reflectors with shadows, though without an associated magnetic anomaly. Possible debris field contain non-ferrous debris, possibly associated with wreck **70089** (**GAD 124**) located 40m E though this is uncertain. Height measurement taken from tallest feature.
70089	GAD 124	Wreck	400594	5682275	A1	21.7	7.9	1.4	1039	Large, irregular mound comprised of numerous linear dark reflectors. No real visible structure remaining, though mound exhibits significant height. Associated with a very large magnetic anomaly, suggesting a significant proportion of ferrous material. Possible wreck remains, though mound does not look like a vessel. No known associated UKHO or NRHE record.
70090	-	Debris Field	400597	5682268	A1	1.8	1.3	0.1	-	Very small area of poorly defined dark reflectors with shadows, located adjacent to wreck **70089** (**GAD 124**) though appears slightly separate from it. No definite magnetic anomaly, though any anomaly would be masked by the wreck. Possible associated debris field. Height measurement taken from tallest feature.
70091	-	Debris Field	400589	5682260	A1	3.5	1.5	0.0	-	Very small area of poorly defined dark reflectors with shadows, located adjacent to wreck **70089** (**GAD 124**) though appears slightly separate from it. No definite magnetic anomaly, though any anomaly would be masked by the wreck. Possible associated debris field.
70092	-	Debris Field	400601	5682264	A1	7.7	3.4	0.2	-	Small area of poorly defined dark reflectors with shadows, located close to wreck **70089** (**GAD 124**)**.** No definite magnetic anomaly, though any anomaly would be masked by the wreck. Possible associated debris field. Height measurement taken from tallest feature.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70093	-	Debris Field	400609	5682274	A1	6.2	2.9	0.4	-	Relatively small but very distinct area of debris, comprised of distinct dark reflectors with shadows. No definite associated magnetic anomaly, though any anomaly would be masked by wreck **70089** (**GAD 124**) located approximately 15m W. Probable debris, possibly associated with **70089** (**GAD 124**) though appears very different in character so could be a completely different feature. Height measurement taken from tallest feature.
70094	-	Debris	400627	5682279	A2	6.3	0.1	0.1	-	Two aligned short, linear dark reflectors with small shadows. No associated magnetic anomaly. Possible single partially buried piece of non-ferrous debris.
70095	-	Debris Field	400652	5682276	A2	11.4	4.8	0.0	41	Area of poorly defined irregular dark and bright reflectors without shadows, though possibly associated with a magnetic anomaly. Possible area of partially ferrous, partially buried debris.
70096	-	Seafloor Disturbance	400660	5682276	A2	4.9	2.5	0.0	22	Small area of seafloor disturbance, possibly associated with a small magnetic anomaly though this is uncertain. Possible area of debris buried just beneath the seabed.
70097	-	Debris	400673	5682291	A2	2.2	0.6	0.3	-	Distinct dark reflector with shadow and possible indication of structure, though no associated magnetic anomaly. Possible piece of non-ferrous debris.
70098	-	Debris Field	400684	5682290	A1	6.2	3.5	1.0	-	Area of dark reflectors and seafloor disturbance centred on a large, distinct dark reflector with shadow. No associated magnetic anomaly. Probable debris field, possibly containing an anchor, though no magnetic anomaly has been identified. Height measurement taken from tallest feature.
70099	-	Debris Field	400695	5682284	A2	5.4	2.2	0.7	-	Small area of dark reflectors and seafloor disturbance centred on a short, linear dark reflector with large shadow. No associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70100	-	Debris	400672	5682311	A2	2.6	1.6	0.2	-	Distinct dark reflector with shadow and small surrounding area of seafloor disturbance. No associated magnetic anomaly. Possible piece of non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70101	-	Dark Reflector	400673	5682330	A2	2.0	0.4	0.3	-	Dark reflector with shadow but no associated magnetic anomaly. Could be natural or a piece of non-ferrous debris.
70102	-	Debris	400684	5682324	A2	6.2	0.6	0.3	-	Distinct, elongate dark reflector with shadow and associated seafloor disturbance, though no magnetic anomaly. Possible piece of non-ferrous debris.
70103	-	Rope / Chain	400694	5682380	A2	195.3	0.3	0.0	-	Very long, intermittent, curvilinear dark reflector without a shadow or associated magnetic anomaly. Possible very long length of rope or chain. Possibly connected with similar feature **70105** further north, though this is uncertain.
70104	-	Debris	400715	5682297	A2	3.6	0.3	0.3	-	Short, linear dark reflector with shadow identified crossing the south end of possible rope or chain **70103.** No associated magnetic anomaly. Possible piece of non-ferrous debris.
70105	-	Debris Field	400716	5682344	A2	4.1	3.2	0.2	-	Small area of irregular dark reflectors with shadows but no associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70106	-	Dark Reflector	400752	5682353	A2	2.4	0.8	0.2	-	Distinct, irregular dark reflector with shadow but no associated magnetic anomaly. Could be non-ferrous debris, but located in an area of natural features so could be natural.
70107	-	Debris Field	400834	5682323	A2	5.7	4.4	0.5	-	Area of irregular dark reflectors with shadows but no associated magnetic anomaly. Possible area of partially buried non-ferrous debris, possibly a large intact piece. Height measurement taken from tallest feature.
70108	-	Dark Reflector	400846	5682377	A2	0.6	0.3	0.7	-	Small, dark reflector with relatively large shadow but without an associated magnetic anomaly. Could be natural or a piece of non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70109	GAD 125	Dispersed Wreck	400568	5682315	A1	38.0	18.2	0.4	-	Large scatter of irregular dark and bright reflectors with shadows, including many short linear features. No associated magnetic anomaly, though any anomaly would possibly be masked by wreck **70089** (**GAD 124**) located approximately 50m SSE. Probable debris field, possibly a dispersed wreck site containing cannons though this is uncertain. Possibly related to other possible dispersed wrecks **70110** (**GAD 126**) and **70115** (**GAD 127**) located to the NNE. Height measurement taken from tallest feature.
70110	GAD 126	Dispersed Wreck	400579	5682348	A1	19.1	18.7	0.5	-	Large scatter of irregular dark reflectors with shadows, no associated magnetic anomaly. Probable debris field, possibly dispersed wreck site though this is uncertain. Possibly related to other possible dispersed wrecks in the vicinity **70109** (**GAD 125**) and **70115** (**GAD 127**)**.** Height measurement taken from tallest feature.
70111	-	Dark Reflector	400563	5682348	A2	1.1	0.1	0.2	-	Dark reflector with shadow but no associated magnetic anomaly, could be natural or non-ferrous debris.
70112	-	Debris	400562	5682351	A2	0.7	0.6	0.3	-	Distinct dark reflector with shadow and small area of surrounding seafloor disturbance. No associated magnetic anomaly. Possible piece of non-ferrous debris.
70113	-	Debris	400565	5682357	A2	2.8	0.1	0.1	-	Elongate dark reflector with shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70114	-	Dark Reflector	400568	5682367	A2	2.0	0.1	0.4	-	Irregular, elongate dark reflector with shadow but no associated magnetic anomaly, could be natural or non-ferrous debris.
70115	GAD 127	Dispersed Wreck	400592	5682373	A1	22.0	6.5	0.3	-	Large scatter of irregular dark reflectors with shadows, no associated magnetic anomaly. Probable debris field, possibly a dispersed wreck site though this is uncertain. Possibly related to other possible dispersed wrecks in the vicinity **70089** (**GAD 124**) and **70110 (GAD I26**)**.** Height measurement taken from tallest feature.
70116	-	Debris	400545	5682348	A2	3.3	0.2	0.1	-	Distinct, short, linear dark reflector with small shadow at each end. No associated magnetic anomaly. Possible piece of partially buried non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70117	-	Debris	400606	5682339	A2	1.2	0.9	0.3	-	Distinct, irregular dark reflector with shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70118	-	Debris	400643	5682334	A2	4.4	2.7	0.3	-	Distinct, short linear dark reflector with shadow and associated seafloor disturbance. No magnetic anomaly. Possible piece of non-ferrous debris.
70119	-	Debris	400640	5682364	A2	1.7	0.6	0.5	-	Distinct dark reflector with shadow and small area of seafloor disturbance, though no associated magnetic anomaly. Possible piece of non-ferrous debris.
70120	-	Dark Reflector	400628	5682370	A2	2.8	0.7	0.3	-	Dark reflector with shadow but no associated magnetic anomaly, could be natural or non-ferrous debris.
70121	-	Dark Reflector	400623	5682384	A2	2.7	0.5	0.2	-	Dark reflector with shadow but no associated magnetic anomaly, could be natural or non-ferrous debris.
70122	-	Debris	400557	5682392	A2	4.0	0.9	0.3	-	Short, linear dark reflector with shadow and area of surrounding seafloor disturbance. No associated magnetic anomaly. Possible piece of non-ferrous debris.
70123	-	Debris Field	400545	5682404	A2	25.5	24.5	0.6	-	Area of irregular dark reflectors with shadows but no associated magnetic anomaly. Possible area of non-ferrous debris. Height taken from tallest feature.
70124	-	Debris	400545	5682420	A2	1.8	0.7	0.1	-	Circular dark reflector with shadow and associated scour, though no magnetic anomaly. Possible piece of non-ferrous debris, could be a tyre or fishing gear.
70125	-	Debris	400536	5682441	A2	2.1	0.6	0.1	-	Short, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70126	-	Seafloor Disturbance	400529	5682453	A2	5.9	4.2	0.0	-	Small area of seafloor disturbance, including a distinct bright reflector. No associated magnetic anomaly. Could be a natural feature, or indicate shallow buried non-ferrous debris.
70127	-	Debris Field	400502	5682470	A2	11.6	10.4	0.5	-	Area of irregular dark reflectors with shadows, including at least two large, distinct features. No associated magnetic anomaly. Possible area of non-ferrous debris. Located at the edge of the survey data coverage, and so extent unknown. Height measurement taken from tallest feature.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70128	-	Debris Field	400658	5682402	A2	3.2	2.4	0.2	-	Small area of poorly defined, irregular dark and bright reflectors. No associated magnetic anomaly. Possible small area of partially buried debris. Height measurement taken from tallest feature.
70129	-	Debris	400658	5682409	A2	3.0	0.5	0.0	-	Short, curvilinear dark reflector without shadow or associated magnetic anomaly. Possible piece of non-ferrous debris.
70130	-	Debris	400668	5682415	A2	1.7	0.2	0.3	9	Distinct, irregular dark reflector with shadow. Possibly associated with a small magnetic anomaly. Possible piece of partially ferrous debris.
70131	-	Debris	400699	5682421	A2	0.8	0.6	0.1	-	Small, elongate dark reflector with shadow but no associated magnetic anomaly. Located adjacent to debris field **70132** and possibly related debris.
70132	-	Debris Field	400705	5682440	A2	19.6	13.2	1.0	-	Area of irregular dark reflectors, including linear features with distinct shadows. No associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70133	-	Rope / Chain	400777	5682406	A2	5.3	0.1	0.1	-	Intermittent, curvilinear dark reflector with small shadow but without an associated magnetic anomaly. Possible partially buried length of rope or chain.
70134	-	Rope / Chain	400799	5682418	A2	8.0	0.3	0.2	-	Intermittent, curvilinear dark reflector with small shadow but without an associated magnetic anomaly. Possible partially buried length of rope or chain.
70135	-	Rope / Chain	400815	5682410	A2	7.3	0.3	0.3	-	Intermittent, curvilinear dark reflector with small shadow but without an associated magnetic anomaly. Possible partially buried length of rope or chain.
70136	-	Rope / Chain	400838	5682419	A2	4.5	0.3	0.0	-	Curvilinear dark reflector with small shadow but without an associated magnetic anomaly. Possible length of rope or chain.
70137	-	Debris	400592	5682487	A2	4.2	0.1	0.1	-	Distinct, short linear dark reflector with shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70138	-	Dark Reflector	400838	5682444	A2	2.9	0.2	0.2	-	Short, curvilinear dark reflector without an associated magnetic anomaly. Possible seabed scar or non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70139	-	Dark Reflector	400836	5682467	A2	1.7	0.1	0.1	-	Short, curvilinear dark reflector without an associated magnetic anomaly. Possible seabed scar or non-ferrous debris.
70140	-	Dark Reflector	400829	5682458	A2	1.1	0.2	0.2	-	Short, curvilinear dark reflector without an associated magnetic anomaly. Possible seabed scar or non-ferrous debris.
70141	-	Dark Reflector	400815	5682467	A2	2.4	0.1	0.1	-	Short, curvilinear dark reflector without an associated magnetic anomaly. Possible seabed scar or non-ferrous debris.
70142	-	Debris Field	400538	5682522	A1	20.3	4.3	0.4	-	Area of distinct, irregular dark reflectors with shadows, including linear features. No associated magnetic anomaly. Probable area of non-ferrous debris, possible wreck debris though this is uncertain. Height measurement taken from tallest anomaly.
70143	-	Debris	400550	5682528	A1	3.7	0.6	0.3	-	Distinct, irregular, linear dark reflector with shadow and associated seabed disturbance/scour. No magnetic anomaly. Possible indication of structure. Probable piece of debris, possibly related to debris field **70142.**
70144	-	Debris	400562	5682516	A2	2.8	0.8	0.3	-	Distinct, irregular, linear dark reflector with shadow and associated seabed disturbance/scour. No magnetic anomaly. Possible indication of structure. Probable piece of debris, possibly related to debris field **70142.**
70145	-	Debris	400572	5682512	A2	1.4	0.3	0.0	-	Distinct, irregular, linear dark reflector with associated seabed disturbance/scour. No magnetic anomaly. Possible indication of structure. Probable piece of debris, possibly related to debris field **70142.**
70146	-	Rope / Chain	400565	5682527	A2	13.1	0.5	0.0	-	Poorly defined, curvilinear dark reflector without a shadow or associated magnetic anomaly. Possible partially buried length of rope or chain.
70147	-	Dark Reflector	400558	5682539	A2	0.9	0.3	0.2	-	Small but distinct dark reflector with shadow and associated small scour, no magnetic anomaly. Could be natural or non-ferrous debris.
70148	-	Debris	400625	5682505	A2	0.7	0.3	0.4	-	Distinct dark reflector with large shadow and small possible scour. No associated magnetic anomaly. Possible piece of non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70149	-	Debris Field	400672	5682498	A2	10.5	7.2	0.2	36	Area of irregular, fairly poorly defined dark reflectors with shadows, including two more distinct circular features. Associated with a relatively small but distinct magnetic anomaly. Possible area of partially ferrous debris. Height measurement taken from tallest feature.
70150	-	Debris	400684	5682482	A2	1.8	1.8	0.1	-	Small, circular dark reflector with small shadow but no associated magnetic anomaly. Very similar to circular features seen as part of nearby debris field **70149.** Possible piece of non-ferrous debris.
70151	-	Rope / Chain	400670	5682516	A2	39.7	0.1	0.0	-	Intermittent, curvilinear dark reflector without a shadow or associated magnetic anomaly. Possible length of rope or chain.
70152	-	Debris	400750	5682472	A2	2.8	0.3	0.3	-	Distinct, elongate dark reflector with distinct shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70153	-	Debris	400724	5682475	A2	2.9	1.2	0.3	-	Short, linear dark reflector with shadow and surrounding area of seafloor disturbance. No associated magnetic anomaly. Possible non-ferrous debris.
70154	-	Debris	400696	5682515	A2	1.1	1.0	0.1	-	Small, circular dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris, possible tyre.
70155	-	Debris	400717	5682534	A2	4.4	2.1	0.5	-	Short, linear dark reflector with shadow and surrounding area of seafloor disturbance. No associated magnetic anomaly. Possible non-ferrous debris.
70156	-	Debris Field	400737	5682508	A2	11.5	6.6	0.0	-	Small area of poorly defined dark and bright reflectors. No magnetic anomaly. Located close to dispersed wreck **70157** (**GAD 128**)**,** and possibly associated debris.
70157	GAD 128	Dispersed Wreck	400760	5682509	A1	45.2	28.3	0.4	-	Large area of distinct, irregular dark reflectors with shadows, including linear features and a possible anchor. No associated magnetic anomaly. Probable area of non-ferrous debris, possible dispersed wreck site though this is uncertain. Height measurement taken from tallest anomaly.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70158	-	Dark Reflector	400748	5682530	A2	0.8	0.3	0.1	-	Dark reflector with shadow but no associated magnetic anomaly. Could be a natural feature or non-ferrous debris. Located close to possible dispersed wreck **70157** (**GAD 128**) and possibly associated.
70159	-	Debris	400795	5682494	A2	1.5	0.8	0.3	-	Distinct dark reflector with shadow and small area of seafloor disturbance, though no associated magnetic anomaly. Possible piece of non-ferrous debris.
70160	-	Debris	400807	5682493	A2	3.7	0.3	0.2	-	Short, linear dark reflector with small shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70161	-	Debris	400803	5682521	A2	4.8	1.1	0.3	-	Elongate dark reflector with shadow and small associated seafloor disturbance. No magnetic anomaly. Possible piece of non-ferrous debris.
70162	-	Debris	400804	5682530	A2	3.1	2.3	0.3	-	Distinct dark reflector with shadow and small associated seafloor disturbance. No magnetic anomaly. Possible piece of non-ferrous debris.
70163	-	Dark Reflector	400801	5682555	A2	1.1	0.7	0.4	-	Dark reflector with shadow and small associated seafloor disturbance. No magnetic anomaly. Could be natural or non-ferrous debris.
70164	-	Rope / Chain	400807	5682547	A2	4.4	0.1	0.2	-	Short, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Possible short length of rope or chain.
70165	-	Dark Reflector	400821	5682523	A2	1.5	0.7	0.4	-	Dark reflector with shadow and small area of seafloor disturbance but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70166	-	Debris	400830	5682526	A2	2.6	0.2	0.1	-	Short, linear dark reflector with shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70167	-	Debris	400518	5682586	A2	2.3	1.7	0.3	-	Very poorly defined dark reflector with a distinct shadow at either end. No associate magnetic anomaly. Possible non-ferrous debris.
70168	-	Debris	400521	5682604	A1	2.0	0.3	0.0	-	Distinct short, linear dark reflector without shadow or an associated magnetic anomaly but with small amount of scour. Probable debris, located close to similar features **70169, 70170** and **70171.** Possible cannon, though this is uncertain.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70169	-	Debris	400517	5682610	A1	2.1	0.3	0.2	-	Distinct short, linear dark reflector with small shadow and scour but without an associated magnetic anomaly. Probable debris, located close to similar features **70168, 70170** and **70171.** Possible cannon, though this is uncertain.
70170	-	Debris	400513	5682612	A1	2.1	0.5	0.2	-	Distinct short, linear dark reflector with small shadow and scour but without an associated magnetic anomaly. Probable debris, located close to similar features **70168, 70169** and **70171.** Possible cannon, though this is uncertain.
70171	-	Debris	400547	5682576	A1	2.4	0.5	0.1	-	Distinct short, linear dark reflector with small shadow and scour but without an associated magnetic anomaly. Probable debris, located close to similar features **70168, 70169** and **70170.** Possible cannon, though this is uncertain.
70172	-	Dark Reflector	400544	5682618	A2	1.9	0.2	0.3	-	Distinct, elongate dark reflector with shadow but no associated magnetic anomaly. Possible non-ferrous debris, though located in an area with numerous natural features so could be natural.
70173	-	Debris	400576	5682597	A2	3.8	2.4	0.2	-	Distinct dark reflector with shadow with surrounding area of seafloor disturbance/scour. No associated magnetic anomaly. Possible piece of non-ferrous debris.
70174	-	Debris	400590	5682569	A2	2.2	0.5	0.1	-	Short, linear dark reflector with shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70175	-	Debris	400604	5682560	A2	2.0	0.2	0.5	-	Distinct short, linear dark reflector with small shadow and surrounding seafloor disturbance/scour. No associated magnetic anomaly. Probable piece of debris, possible cannon though this is uncertain.
70176	-	Debris	400619	5682593	A2	7.4	0.7	0.2	-	Short, curvilinear dark reflector with distinct shadow but no associated magnetic anomaly. Appears natural, though would be the only natural feature of this kind in the area, so could be non-ferrous debris.
70177	-	Rope / Chain	400667	5682608	A2	73.8	0.2	0.0	-	Long, intermittent, curvilinear dark reflector without a shadow or associated magnetic anomaly. Possible length of rope or chain. Crosses through dispersed wreck **70178** (**GAD 129**)**,** so is possibly a later feature. Possibly an extension of feature **70151** located to the south, though this is uncertain.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70178	GAD 129	Dispersed Wreck	400668	5682619	A1	38.6	21.9	0.4	10	Area of scattered, distinct dark reflectors with shadows, including some short linear features. Possibly associated with a small magnetic anomaly. Probably partially ferrous debris field, possible dispersed wreck site though this is uncertain. Height measurement taken from tallest feature.
70179	-	Debris Field	400653	5682602	A2	5.1	3.1	0.3	-	Small area of dark reflectors with shadows but no associated magnetic anomaly. Possible debris related to dispersed wreck **70178** (**GAD 129**)**.**
70180	-	Debris	400652	5682590	A2	2.0	0.3	0.2	-	Irregular dark reflector with shadow but no associated magnetic anomaly, possible piece of non-ferrous debris.
70181	-	Debris Field	400738	5682569	A2	6.4	4.5	0.0	-	Small area of poorly defined, irregular dark and bright reflectors. No associated magnetic anomaly. Possible small area of partially buried debris, possibly associated with dispersed wreck **70157** (**GAD 128**) though this is uncertain.
70182	-	Dark Reflector	400711	5682627	A2	0.9	0.4	0.4	-	Distinct dark reflector with shadow but no associated magnetic anomaly. Only identified on one survey line, though could be natural or non-ferrous debris.
70183	-	Debris	400752	5682598	A2	1.8	0.4	0.2	-	Irregular dark reflector with shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70184	-	Debris	400762	5682592	A2	4.4	0.1	0.0	-	Short, linear dark reflector without shadow or associated magnetic anomaly. Possible partially buried piece of non-ferrous debris.
70185	-	Debris	400772	5682612	A1	7.9	4.2	0.6	-	Large, distinct, elongate dark reflector with shadow and large distinct scour. No associated magnetic anomaly. Possible piece of non-ferrous debris. Other smaller pieces of debris possibly present in the immediate vicinity.
70186	-	Debris	400817	5682589	A2	1.0	1.0	0.0	-	Distinct, round dark reflector without shadow but with a small amount of surrounding seafloor disturbance/scour. No associated magnetic anomaly. Possible non-ferrous debris, possible tyre.
70187	-	Dark Reflector	400830	5682599	A2	2.1	0.8	0.3	-	Poorly defined, irregular dark reflector with shadow but no associated magnetic anomaly. Could be natural or non-ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70188	-	Dark Reflector	400829	5682580	A2	1.4	0.2	0.1	-	Elongate dark reflector with shadow but no associated magnetic anomaly. Only identified on one survey line, though could be a seabed scar or non-ferrous debris.
70189	-	Dark Reflector	400838	5682571	A2	2.2	0.2	0.1	-	Elongate dark reflector with shadow but no associated magnetic anomaly. Only identified on one survey line, though could be a seabed scar or non-ferrous debris.
70190	-	Dark Reflector	400839	5682556	A2	3.6	0.3	0.0	-	Elongate dark reflector with shadow but no associated magnetic anomaly. Only identified on one survey line, though could be a seabed scar or non-ferrous debris.
70191	-	Dark Reflector	400869	5682567	A2	3.4	0.2	0.2	-	Irregular dark reflector with shadow but without associated magnetic anomaly. Only identified on one survey line, though could be non-ferrous debris or a natural feature.
70192	-	Rope / Chain	400812	5682626	A2	4.3	0.3	0.2	-	Curvilinear dark reflector with small shadow but without an associated magnetic anomaly. Possible length of rope or chain.
70193	-	Debris	400821	5682620	A2	3.2	0.2	0.2	-	Short, distinct, curved dark reflector with distinct shadow. No associated magnetic anomaly. Possible piece of non-ferrous debris.
70194	-	Debris	400791	5682647	A1	6.5	3.7	0.4	-	Large, distinct, elongate dark reflector with shadow and large distinct scour. No associated magnetic anomaly. Possible piece of non-ferrous debris. Other smaller pieces of debris possibly present in the immediate vicinity.
70195	-	Dark Reflector	400796	5682642	A2	2.1	0.1	0.1	-	Elongate dark reflector with shadow but no associated magnetic anomaly. Could be a seabed scar or non-ferrous debris.
70196	-	Rope / Chain	400780	5682668	A2	6.0	0.2	0.1	-	Curvilinear dark reflector with distinct but small shadow along one half of the feature. No associated magnetic anomaly. Possible partially buried length of rope of chain.
70197	-	Dark Reflector	400792	5682667	A2	0.6	0.1	0.1	-	Poorly defined, irregular dark reflector with shadow but no associated magnetic anomaly. Could be a seabed scar or non-ferrous debris.
70198	-	Dark Reflector	400819	5682679	A2	4.5	0.1	0.1	-	Short, intermittent, curvilinear dark reflector with small shadow. No associated magnetic anomaly. Could be partially buried non-ferrous debris or a seabed scar.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70199	-	Seafloor Disturbance	400815	5682661	A2	5.3	2.9	0.0	-	Irregular area of seafloor disturbance, no associated magnetic anomaly. Only identified on one survey line, though could be a natural feature or indicate shallow buried non-ferrous debris.
70200	-	Debris	400834	5682650	A2	0.7	0.7	0.2	-	Small but distinct, circular dark reflector with small shadow and small area of seafloor disturbance/scour. No associated magnetic anomaly. Possible piece of non-ferrous debris.
70201	-	Dark Reflector	401030	5682688	A2	0.9	0.3	0.2	-	Distinct, isolated dark reflector with shadow but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70202	-	Debris Field	400621	5682693	A2	7.2	2.9	0.3	-	Area of irregular dark reflectors with shadow and possible area of seafloor disturbance. No associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70203	-	Debris	400602	5682730	A2	1.1	0.8	0.5	-	Distinct dark reflector with large shadow but no associated magnetic anomaly, possible piece of non-ferrous debris.
70204	-	Seafloor Disturbance	400673	5682731	A2	3.6	2.5	0.0	-	Area of poorly defined seafloor disturbance without an associated magnetic anomaly. Could be natural or indicate shallow buried non-ferrous debris.
70205	-	Debris Field	400751	5682711	A2	7.5	4.8	0.3	-	Area of distinct, irregular dark reflectors with shadows, including linear features. No associated magnetic anomaly. Probable area of non-ferrous debris. Height measurement taken from tallest anomaly.
70206	-	Debris Field	400779	5682722	A2	5.7	2.7	0.3	-	Area of distinct, irregular dark reflectors with shadows, including one very distinct linear feature with large shadow. No associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70207	-	Debris Field	400775	5682694	A2	6.3	2.0	0.4	-	Small area of relatively poorly defined dark reflectors with shadows. No associated magnetic anomaly. Possible area of non-ferrous debris. Located close to similar debris fields **70208, 70209** and **70210.** Height measurement taken from tallest feature.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70208	-	Debris Field	400782	5682698	A2	3.0	2.4	0.1	-	Small area of relatively poorly defined dark reflectors with shadows. No associated magnetic anomaly. Possible area of non-ferrous debris. Located close to similar debris fields **70207, 70209** and **70210.** Height measurement taken from tallest feature.
70209	-	Debris Field	400789	5682694	A2	5.6	3.2	0.4	-	Small area of relatively poorly defined dark reflectors with shadows. No associated magnetic anomaly. Possible area of non-ferrous debris. Located close to similar debris fields **70207, 70208** and **70210.** Height measurement taken from tallest feature.
70210	-	Debris Field	400795	5682698	A2	7.8	3.6	0.1	-	Small area of relatively poorly defined dark reflectors with shadows. No associated magnetic anomaly. Possible area of non-ferrous debris. Located close to similar debris fields **70207, 70208** and **70209.** Height measurement taken from tallest feature.
70211	-	Dark Reflector	400818	5682723	A2	5.1	0.1	0.1	-	Short, intermittent, curvilinear dark reflector with small shadow. No associated magnetic anomaly. Could be partially buried non-ferrous debris or a seabed scar.
70212	-	Dark Reflector	400880	5682690	A2	2.5	0.4	0.1	-	Short, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Could be non-ferrous debris or a seabed scar. Located close to similar features **70213, 70214** and **70215.**
70213	-	Dark Reflector	400880	5682686	A2	2.7	0.5	0.1	-	Short, curvilinear dark reflector with small shadow but no associated magnetic anomaly. Could be non-ferrous debris or a seabed scar. Located close to similar features **70212, 70214** and **70215.**
70214	-	Dark Reflector	400877	5682685	A2	2.6	0.4	0.0	-	Short, curvilinear dark reflector without a shadow or associated magnetic anomaly. Could be non-ferrous debris or a seabed scar. Located close to similar features **70212, 70213** and **70215.**
70215	-	Dark Reflector	400876	5682690	A2	1.5	0.5	0.0	-	Short, curvilinear dark reflector without a shadow or associated magnetic anomaly. Could be non-ferrous debris or a seabed scar. Located close to similar features **70212, 70213** and **70214.**

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70216	-	Debris Field	400573	5682764	A1	6.7	2.1	0.4	421	Area of crossing short, linear dark reflectors with shadows, difficult to image clearly due to the noisy background seabed. Associated with a large, distinct magnetic anomaly. Probable ferrous debris.
70217	-	Rope / Chain	400719	5682805	A2	5.3	0.4	0.0	-	Short, curvilinear dark reflector without shadow or associated magnetic anomaly. Possible partially buried length of rope or chain.
70218	-	Debris	400756	5682782	A2	3.5	0.5	0.2	-	Short, linear dark reflector with small shadow and surrounding seafloor disturbance. No associated magnetic anomaly. Possible piece of non-ferrous debris.
70219	-	Debris	400751	5682772	A2	1.6	1.4	0.2	-	Irregular dark reflector with irregular shadow, but no associated magnetic anomaly. Possible non-ferrous debris.
70220	-	Debris	400792	5682801	A2	0.8	0.3	0.3	-	Distinct, angular dark reflector with large shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70221	-	Dark Reflector	400878	5682807	A2	1.1	0.2	0.4	-	Distinct dark reflector with shadow and possible small scour, but no associated magnetic anomaly. Could be a natural feature or non-ferrous debris.
70222	-	Debris Field	400926	5682874	A2	26.3	14.8	0.3	16	Area of very poorly defined bright reflectors and dark reflectors with shadows, possibly associated with a small magnetic anomaly. Possible area of partially ferrous debris. Height measurement taken from tallest feature.
70223	-	Debris Field	400932	5682850	A2	4.1	2.2	0.0	-	Very small area of poorly defined bright reflectors but no associated magnetic anomaly. Possible non-ferrous debris related to debris field **70222.**
70224	-	Debris	400916	5682853	A2	3.1	0.9	0.2	-	Distinct short, linear dark reflector with shadow and small scour but without an associated magnetic anomaly. Probable non-ferrous debris.
70225	-	Debris	400896	5683057	A2	1.7	0.3	0.7	-	Poorly defined, elongate dark reflector with distinct shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.

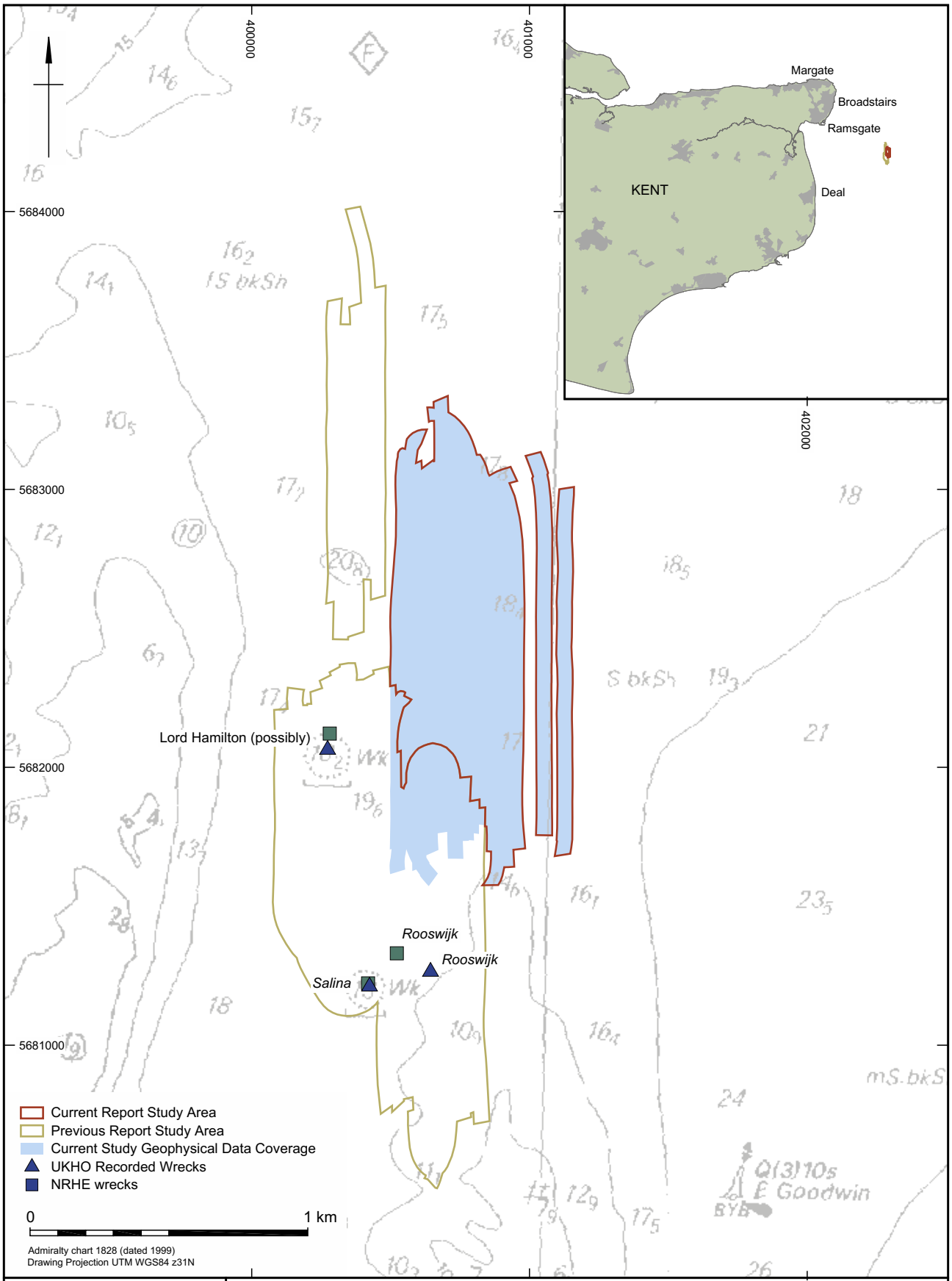
WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70226	-	Debris Field	400882	5682912	A2	2.9	1.4	0.0	-	Small area of irregular dark and bright reflectors, possible debris field. Small mound identified on multibeam data.
70227	-	Debris	400817	5682867	A2	1.8	0.9	0.2	-	Distinct, irregular dark reflector with shadow and possible indication of structure. No associated magnetic anomaly. Probable large piece of non-ferrous debris, possibly related to debris field **70228** approximately 50m NNW though this is uncertain.
70228	-	Debris Field	400770	5682876	A1	15.2	8.5	0.3	23	Area of distinct, irregular dark reflectors with shadows and area of seafloor disturbance. Possibly associated with a relatively small magnetic anomaly. Probable area of partially ferrous debris, possible wreck remains though this is uncertain. Height measurement taken from tallest feature.
70229	-	Debris	400572	5682890	A2	2.0	0.5	0.4	40	Distinct, irregular dark reflector with shadow associated with a distinct magnetic anomaly. Probable piece of ferrous debris.
70230	-	Debris	400612	5682842	A1	3.0	0.3	0.3	12	Distinct short, linear dark reflector with distinct shadow. Possibly associated with a small magnetic anomaly. Probable partially ferrous debris, possible cannon related to nearby possible cannon site **70235** (**GAD 130**)**.**
70231	-	Debris	400620	5682881	A1	2.0	0.3	0.2	-	Distinct short, linear dark reflector with distinct shadow but no definite associated magnetic anomaly. Probable non-ferrous debris, possible cannon related to nearby possible cannon site **70235** (**GAD 130**)**.**
70232	-	Debris	400636	5682876	A1	2.9	0.8	0.3	-	Distinct short, linear dark reflector with distinct shadow and small scour but no definite associated magnetic anomaly. Probable non-ferrous debris, possible cannon related to nearby possible cannon site **70235** (**GAD 130**)**.**
70233	-	Debris	400635	5682862	A1	3.1	0.6	0.3	-	Distinct short, linear dark reflector with distinct shadow and small scour but no definite associated magnetic anomaly. Probable non-ferrous debris, possible cannon related to nearby possible cannon site **70235** (**GAD 130**)**.**
70234	-	Debris	400635	5682842	A1	2.7	0.4	0.2	-	Distinct short, linear dark reflector with distinct shadow and small scour but no definite associated magnetic anomaly. Probable non-ferrous debris, possible cannon related to nearby possible cannon site **70235** (**GAD 130**)**.**

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70235	GAD 130	Cannon Site	400643	5682854	A1	29.3	5.9	0.3	115	Area containing seven distinct short, linear dark reflectors with distinct shadows, all almost identical in appearance. Associated with a large, distinct magnetic anomaly. Probable area of at least partially ferrous debris, possible cannon site related to a number of other potential cannons (12 in all) and other small pieces of debris identified within the vicinity. No indication of other wreck remains in the area (e.g. hull structure). Height measurement taken from tallest feature.
70236	-	Debris Field	400655	5682846	A1	4.9	2.5	0.2	-	Small area of irregular dark reflectors with shadows nut no definite associated magnetic anomaly. Probable area of non-ferrous debris, possibly related to nearby possible cannon site **70235** (**GAD 130**). Height measurement taken from tallest feature.
70237	-	Debris Field	400672	5682857	A1	4.7	2.8	0.0	-	Small area of poorly defined, linear bright reflectors without an associated magnetic anomaly. Probable non-ferrous debris, possibly related to nearby possible cannon site **70235** (**GAD 130**).
70238	-	Debris Field	400690	5682881	A2	14.7	7.2	0.2	-	Area of irregular dark reflectors with shadows, including two distinct crossing linear features. No associated magnetic anomaly. Possible area of non-ferrous debris, possibly related to nearby possible cannon site **70235** (**GAD 130**) located approximately 55m SW though this is uncertain.
70239	-	Debris Field	400649	5682925	A2	4.0	2.5	0.4	-	Small area of distinct dark reflectors with shadows but no associated magnetic anomaly. Possible area of non-ferrous debris. Height measurement taken from tallest feature.
70240	-	Dark Reflector	400519	5683011	A2	1.1	0.6	0.1	-	Poorly defined, irregular dark reflector with shadow but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70241	-	Dark Reflector	400527	5683026	A2	1.0	0.6	0.2	-	Poorly defined, irregular dark reflector with shadow but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70242	-	Debris Field	400568	5683045	A2	3.0	2.3	0.2	32	Small area of distinct, irregular dark reflectors with large shadows, mainly two dominant adjacent features. Associated with a distinct magnetic anomaly. Probable partially ferrous debris.

WA_ID	GAD_ID	Classification	Easting	Northing	Archaeological Discrimination	L (m)	W (m)	H (m)	Magnetic Amplitude (nT)	Notes
70243	-	Debris	400598	5683065	A2	0.9	0.7	0.1	-	Small, irregular, poorly defined dark reflector with distinct shadow. No associated magnetic anomaly. Possible non-ferrous debris.
70244	-	Debris	400595	5683015	A2	1.2	0.8	0.3	-	Distinct, elongate dark reflector with shadow and associated seafloor disturbance, though no magnetic anomaly. Possible piece of non-ferrous debris.
70245	-	Debris Field	400595	5682990	A1	9.1	3.2	0.4	118	Area of distinct, curvilinear dark reflectors with shadows, associated with a large, distinct magnetic anomaly. Probable area of ferrous debris. Height measurement taken from tallest feature.
70246	-	Rope / Chain	400654	5683003	A2	55.3	0.1	0.0	-	Long, approximately N-S trending, intermittent curvilinear dark reflector without a shadow or associated magnetic anomaly. Probable length of partially buried rope or chain.
70247	-	Debris	400672	5683015	A2	2.8	0.6	0.2	-	Distinct, short, linear dark reflector with shadow and associated small area of seafloor disturbance. No associated magnetic anomaly. Probable piece of non-ferrous debris.
70248	-	Debris	400692	5683168	A2	0.8	0.6	0.8	-	Distinct, rectangular dark reflector with large shadow but no associated magnetic anomaly. Possible piece of non-ferrous debris.
70249	-	Dark Reflector	400659	5683225	A2	0.2	0.1	0.1	-	Distinct dark reflector with shadow but no associated magnetic anomaly. Could be natural or non-ferrous debris.
70250	-	Debris	400641	5683256	A2	0.5	0.5	0.0	-	Small, curved dark reflector without shadow or associated magnetic anomaly. Possible piece of non-ferrous debris.
70251	-	Debris	400620	5683206	A2	2.9	0.3	0.3	-	Elongate dark reflector with distinct shadow but without an associated magnetic anomaly. Possible piece of non-ferrous debris.

Notes

1. Co-ordinates are in WGS84 UTM31N
2. Positional accuracy estimated ±10m



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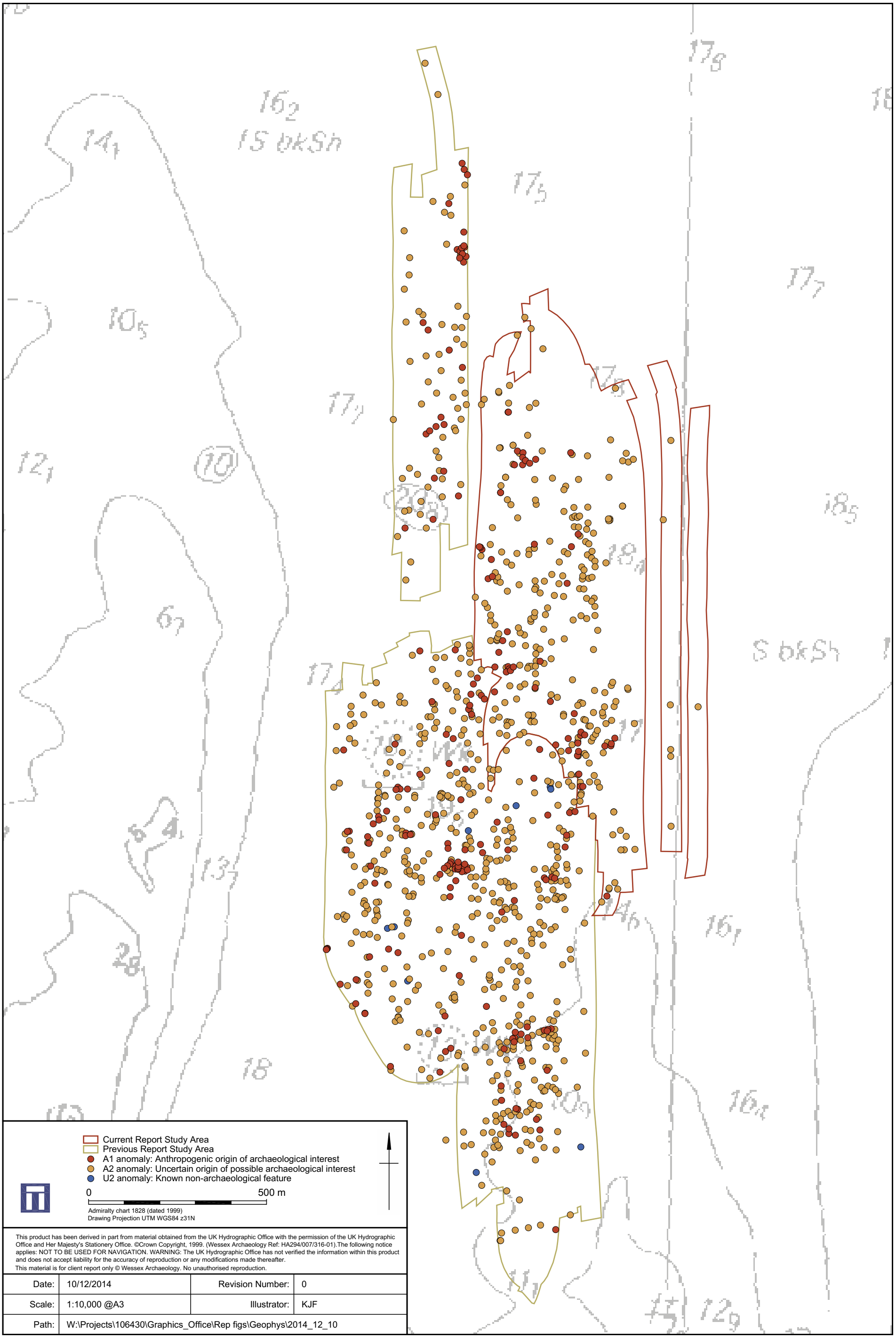
Study Area Location

Figure 1



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Seabed Anomalies – 2009 and 2014 Interpretation

Figure 2

A. Marine Magnetometer (WA 2009, +/-5nT)

B. Multibeam Bathymetry (MCA 2009, 1m grid)

m LAT
-13.76
-22.20

Current Report Study Area
Previous Report Study Area

0 500 m

Admiralty chart 1828 (dated 1999)
Drawing Projection UTM WGS84 z31N

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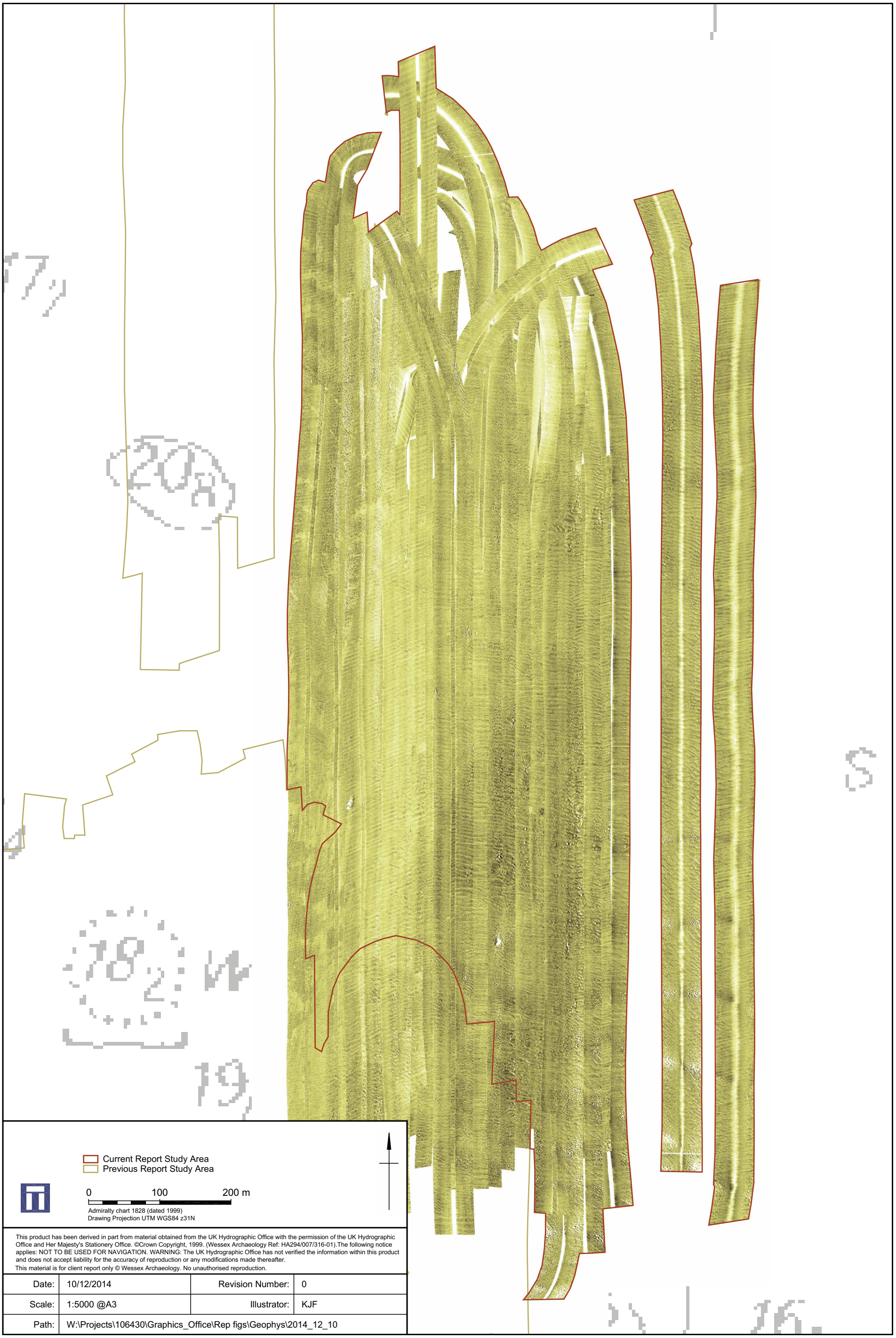
Magnetometer and Bathymetry Data

Figure 3



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2014 Sidescan Sonar Mosaic

Figure 4

Date:	13/02/2015	Revision Number:	2
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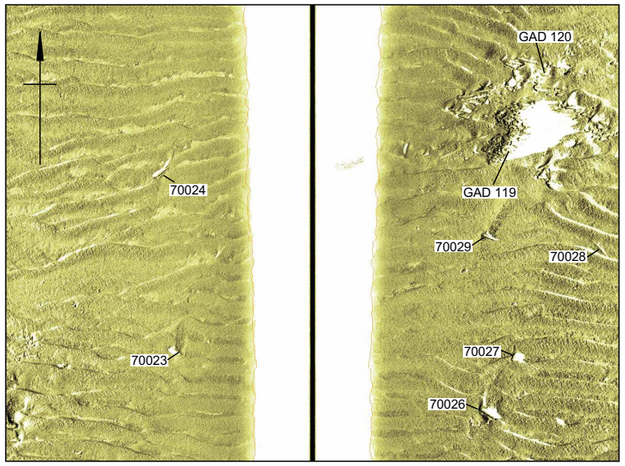
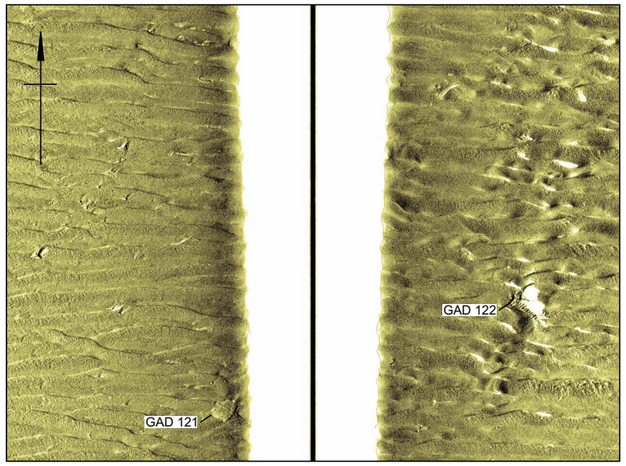
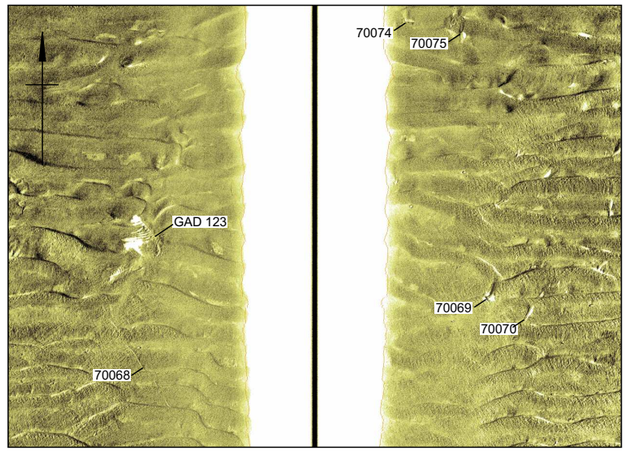


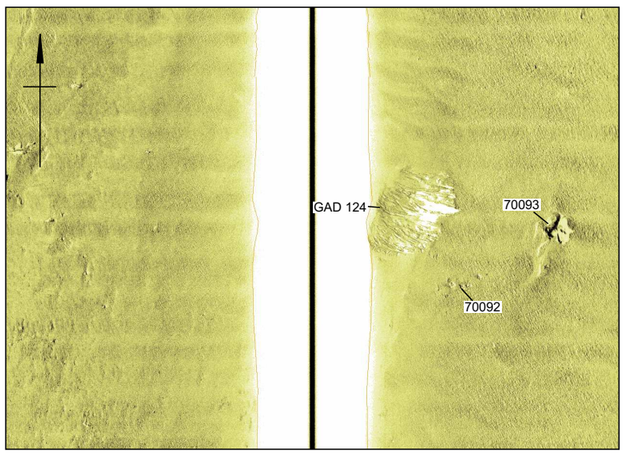
A. GAD 119 and GAD 120 – Wreck and Dispersed Wreck



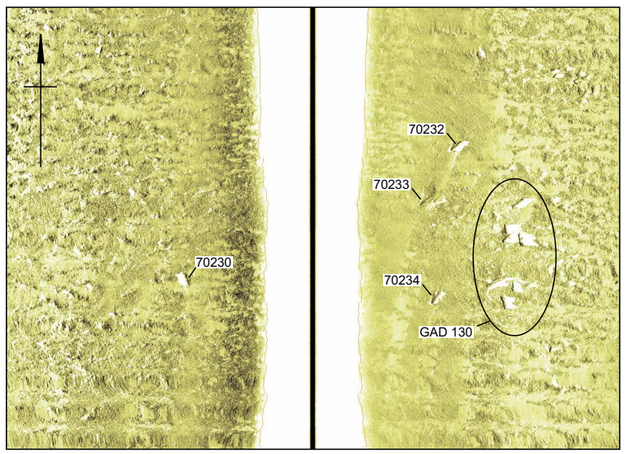
B. GAD 121 and GAD 122 – Wrecks



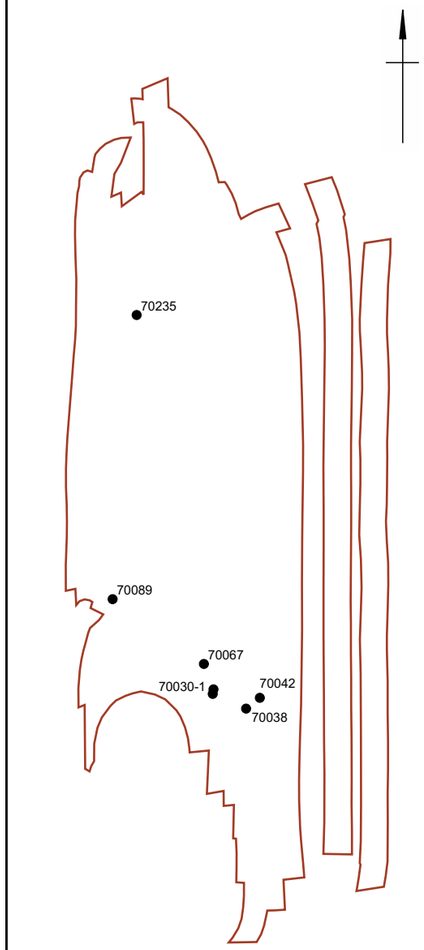
C. GAD 123 – Wreck



D. GAD 124 – Wreck



E. GAD 130 – Cannon Site



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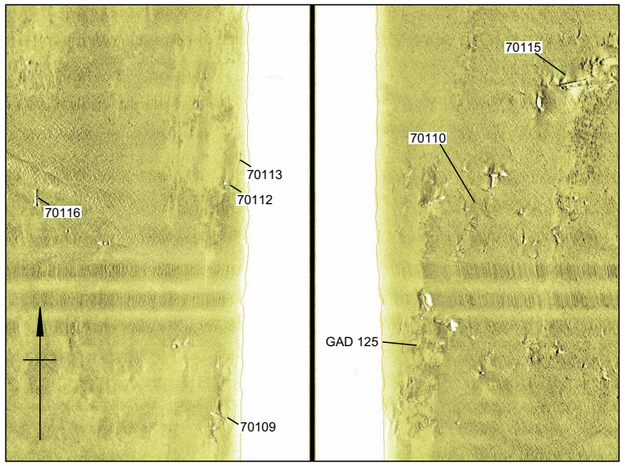
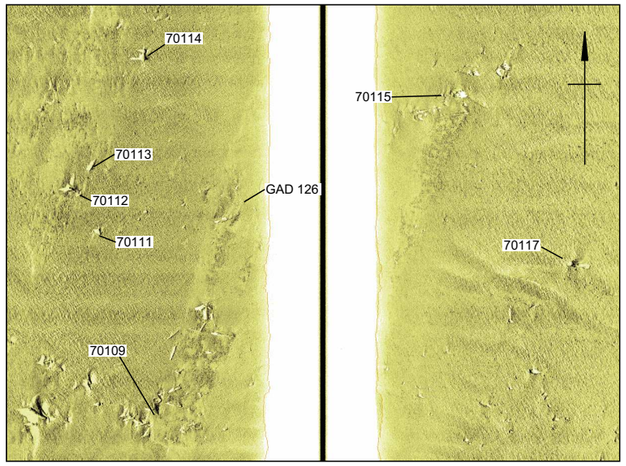
Sidescan Sonar Data Examples – Possible Wrecks (Including Dispersed Wreck GAD 120)

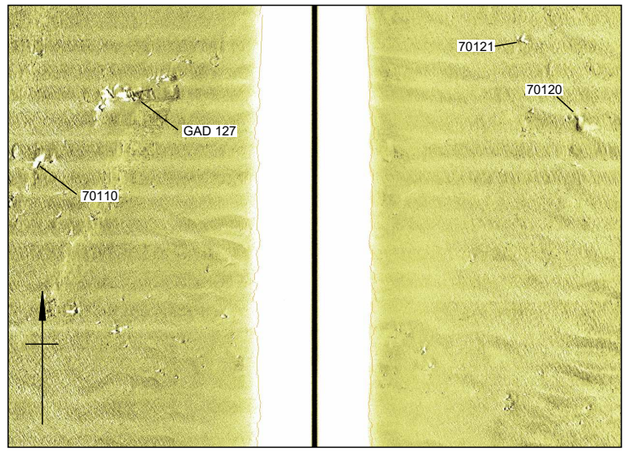
Figure 6



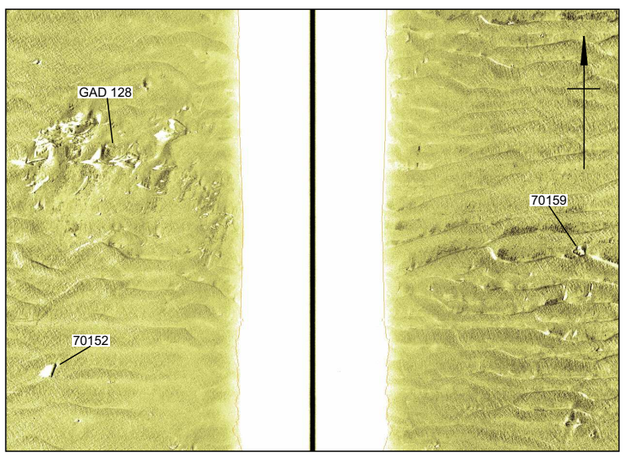
A. GAD 125 - Dispersed Wreck



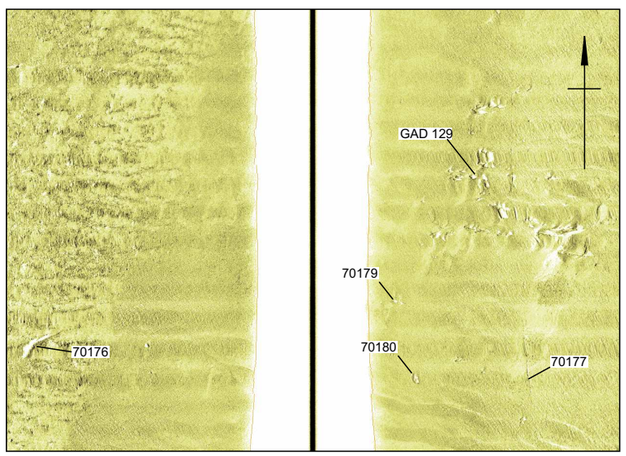
B. GAD 126 – Dispersed Wreck



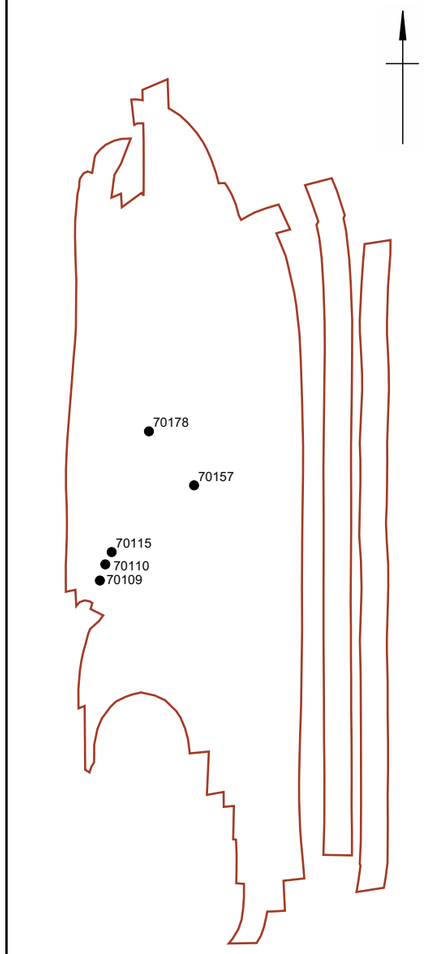
C. GAD 127 – Dispersed Wreck



D. GAD 128 – Dispersed Wreck



E. GAD 129 – Dispersed Wreck



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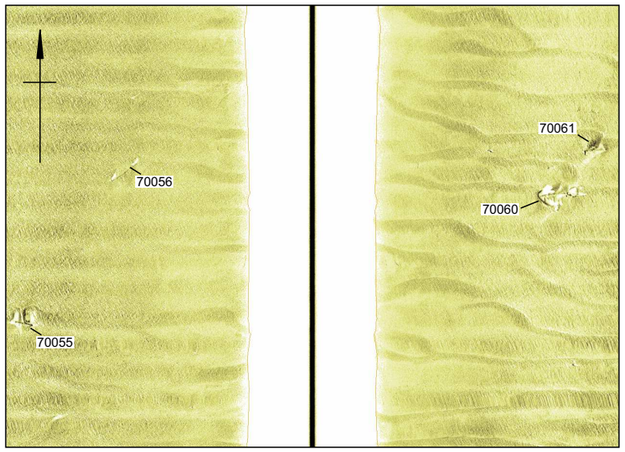
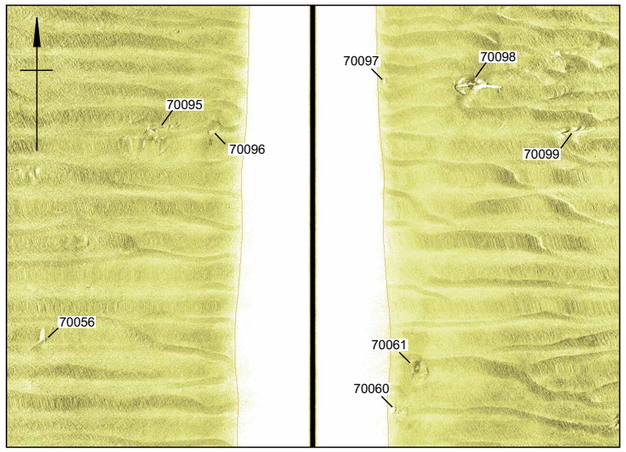
Sidescan Sonar Data Examples – Possible Dispersed Wrecks (Excluding GAD 120)

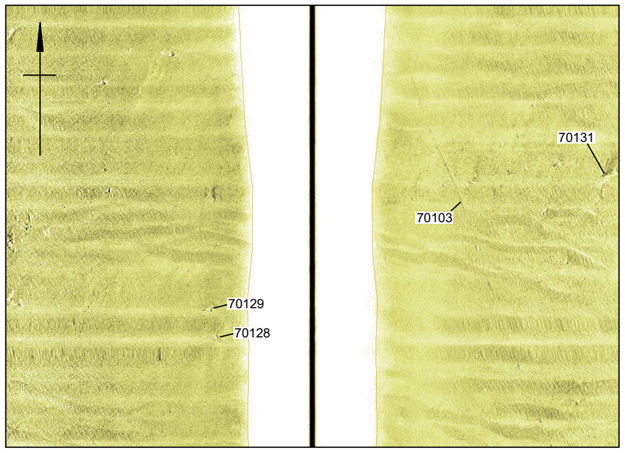
Figure 7



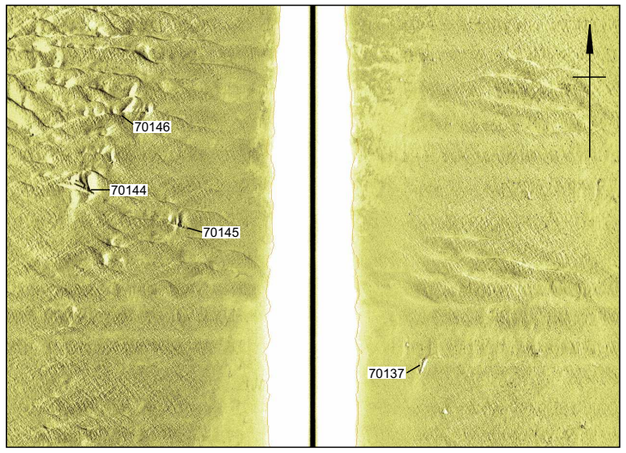
A. 70060 – Anchor



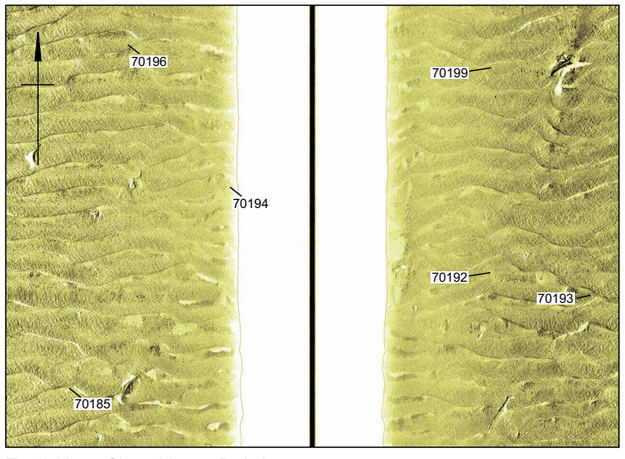
B. 70098 – Anchor



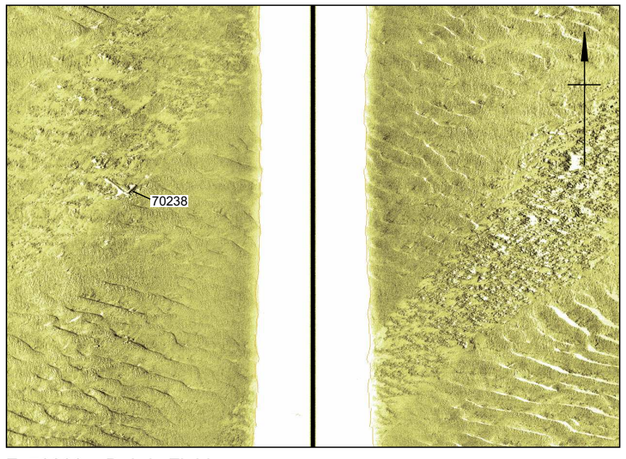
C. 70103 – Rope or Chain/Cable



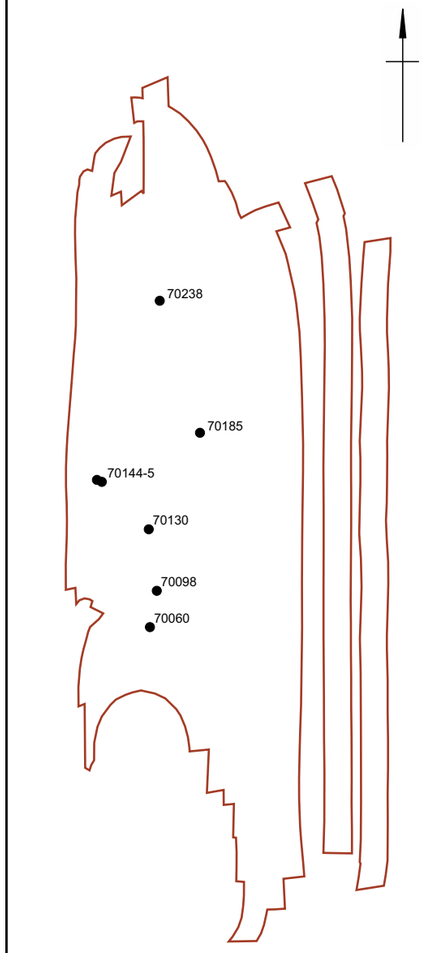
D. 70144, 70155 – Short Linear Debris



E. 70185 – Short Linear Debris



F. 70238 – Debris Field



Current Report Study Area

0 500 m

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Revision Number:	0
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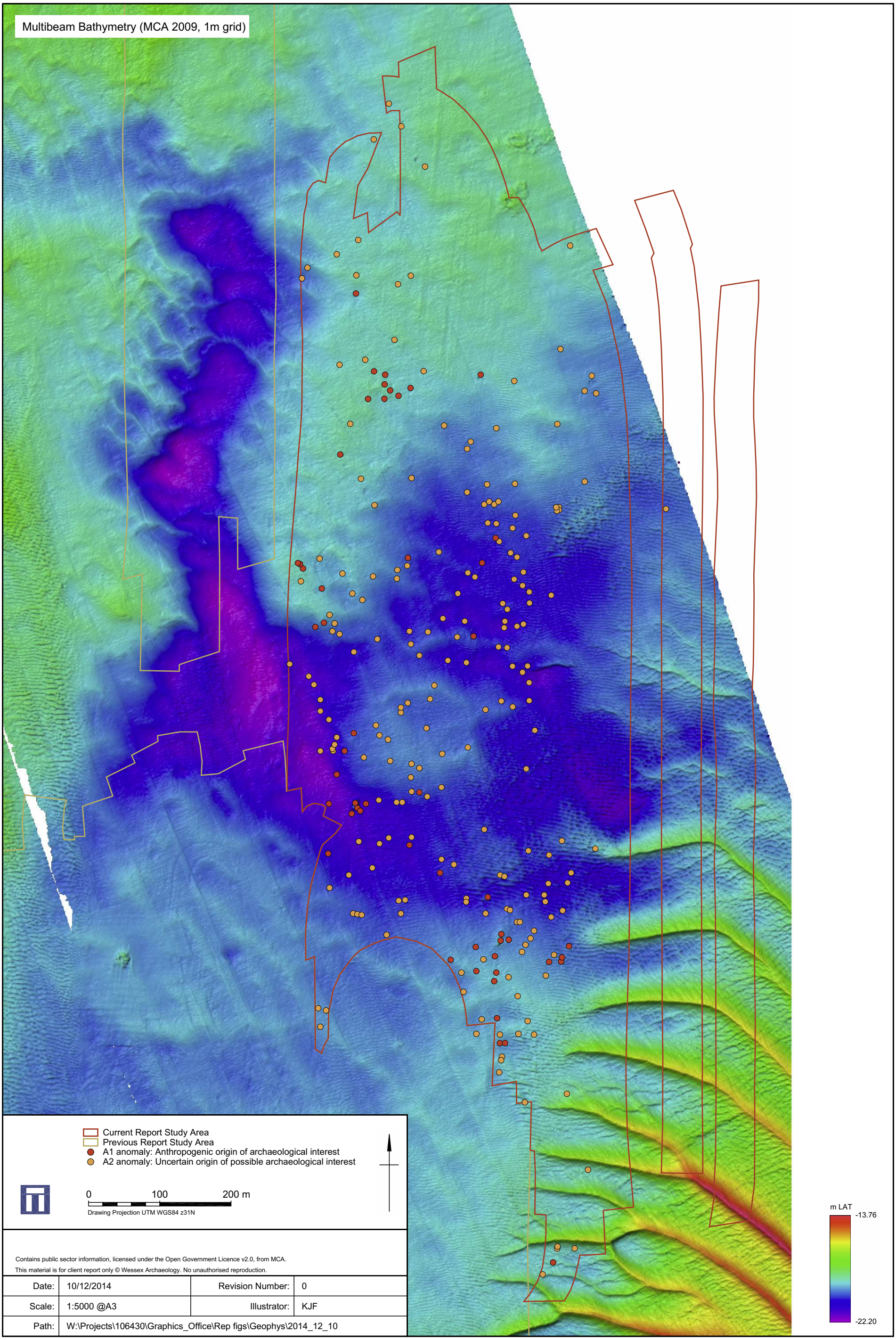
Sidescan Sonar Data Examples – Debris

Figure 8



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Distribution of Anomalies Relative to Bathymetry

Figure 9

A. Multibeam Bathymetry (MCA 2009, 1m grid)

B. Sidescan Sonar Image - GAD 56

C. Sidescan Sonar Image - GAD 6

m LAT
-15.45
-22.04

Current Report Study Area
Previous Report Study Area

0 100 m

Drawing Projection UTM WGS84 z31N

0 1 km

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Comparison of Sidescan sonar and Bathymetry Data - GAD 6 and GAD 56

Figure 10

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