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Hanover Protected Wreck: Marine Assessment for Possible De-Designation

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SUMMARY

Cotswold Archaeology was commissioned by Historic England in February 2016 to undertake a marine assessment for possible de-designation on three designated wreck sites, Brighton Marina, Langdon Bay and the *Hanover*. This report focuses on the latter, although it should be stated from the outset, that there has been some suggestion that the identification of this site as that of the *Hanover* may not be accurate (Archaeological Diving Unit, 1997). Despite this and to avoid confusion the site will be referred to throughout this report as the *Hanover*.

The designation is based on the *Hanover*, a 100ft, two-masted square rigger brigantine which began service as a packet ship in Falmouth in 1758 under the command of Captain Williams. Captain Joseph Sherbourne took command of the *Hanover* on 19 July 1761 and remained in that role until the ship sank. The *Hanover* wrecked on the north Cornish coast in December 1763, in a cove that was subsequently named after the wreck. Of those on board only two men and a boy survived. The vessel was reported to be carrying mail and a cargo of bullion of an estimated value of between £17,000 and £60, 000 (Parham e*t al*, n.d.).

The wreck site was discovered in June 1994 by Colin Martin, who subsequently became the salvor (Historic England, 2015). He identified the site as that of the *Hanover* as he claimed to have recovered a bronze bell that was inscribed 'The Hanover Paquet 1757' and a mourning ring inscribed with the name of the deceased wife of the ship's master, although there is some doubt as to whether these artefacts were actually found on this site (Archaeological Diving Unit, 1997).

The site was subject to an emergency designation on 18 July 1997 after more than 50 guns were raised by a salvage rig positioned adjacent to the wreck, thereby destabilising the site. Following continued salvage of the wreck under licence it is unclear whether any archaeological material survives on the site. This report presents the results of desk-based research, an intertidal/foreshore walkover survey, and marine geophysical survey which identified a cluster of magnetic anomalies (MAG0001–MAG0014) *c*. 100m west of the previously recorded wreck location.

CONTRIBUTORS

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DATE OF PROJECT

May 2017

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1 INTRODUCTION

Outline

1.1 Cotswold Archaeology (CA) was appointed by Historic England (HE) to carry out an assessment of the *Hanover* protected wreck (List Entry Number 1000072) with the aim of reassessing the designation status of the site. This assessment comprises desk-based research, marine geophysical, and foreshore/intertidal walk-over surveys.

Co-Ordinate Systems And GIS

1.2 The project ArcGIS workspace was set up in WGS1984, using the UTM Zone 30N projection. Existing site plans were georeferenced to modern charts in this projection.

Location

1.3 The protected wreck site of the *Hanover* is designated as an area of 250m radius centred on the point 50° 20.075 N 5° 10.823 W (WGS84) (Figure 1), lying below the high water mark of ordinary spring tides (Historic England, 2016). The designated area is located in Hanover Cove, near Cligga Head on the north coast of Cornwall. The wreck was reportedly found lying in a gully between a large rock and a submerged reef at a depth of 3 or 4m at low water spring tides (Parham e*t al*, n.d.).

1.4 This description is not consistent, however, with the observations made during the 2017 foreshore/intertidal walkover survey when the recorded location of the wreck was dry at low water spring tide. This, and photographs of the location of Hydrasalve's jack-up barge, casts some doubt on the reliability of Hydrasalve's description of the location of the wreck site. When compared to aerial photographs, the jack-up barge appears to be positioned at least 40m west of the reported location of the wreck site (Figure 1 and Figure 2).

1.5 The gulley in which the wreck was reportedly found is a high energy environment, compounded by waves reflecting back off the 90m high cliffs that overlook the cove, making conditions very difficult for a dive support vessel (Parham e*t al*, n.d.). The British Geological Survey (BGS) indicates that the bedrock underlying the site and its environs is the Grampound Formation, comprised of interbedded sedimentary siltstone and mudstone (BGS, 2016).

Scope and aims

1.6 This assessment focuses on the known and potential archaeological remains allegedly associated with the wreck of the packet ship *Hanover*, using a combination of desk-based research, marine geophysical survey (Figure 1) and foreshore/intertidal walkover survey (Figure 2). The *Hanover* was a 100ft two-masted square rigger brigantine, built in 1757. The ship was *en route*

from Lisbon, Portugal to Falmouth, Cornwall carrying £60,000 in gold and valuables (Historic England, 2015) when a gale drove it into a small bay on the north Cornish coast on 13 December 1763 and it was wrecked.

1.7 The site of the *Hanover* was discovered in June 1994 by Colin Martin, a salvor based in Cornwall (Historic England, 2015; Private Eye, 1998).

1.8 The identification of the site is derived from a bronze bell, inscribed 'The Hanover Paquet 1757', and a mourning ring inscribed with the name of the deceased wife of the ship's master, which are alleged to have been recovered from the site (Parham e*t al*, n.d.). An emergency designation was made on 18 July 1997 after a salvage rig which was positioned over the wreck had raised more than 50 guns, thereby destabilising the site (Historic England, 2015). Subsequent to the designation of the wreck there has been some doubt placed on the provenance of the finds used to identify the wreck (Archaeological Diving Unit, 1997).

1.9 More recently, licences to investigate the wreck of the *Hanover* have been granted to Mark James from 2010–2011 and to Michael Hamilton-Scott in 2012 (Historic England, 2015). At present there are no active licensees working on the wreck site.

1.10 The aims of this project (no 7375) (Historic England, 2015) are:

- to allow Historic England to update/enhance the quality of the National Heritage List Entry (NHLE);
- to undertake site risk assessments to inform Heritage at Risk;
- to allow better understanding of the sites and how they had been identified for designation previously, thereby helping improve Historic England's future assessment approach to candidate sites;
- to identify the probability of the presence / absence of archaeological remains; and
- to potentially save resources in terms of Historic England officer time and money and allow this to be redirected to other designated and significant sites.

1.11 This assessment focuses on the *Hanover* designated area (Figure 1) but also, where informative, historic environment evidence and heritage assets in the wider environs.

2 HISTORIC BACKGROUND

2.1 The *Hanover* was a 100ft, two-masted square-rigged brigantine, thought to have been built in 1757. It is unclear where the *Hanover* was built, and there is a possibility that the 1757 inscription on the bell in fact refers to the year of commission (Parham e*t al*, 2013). This was the third packet ship to take the name *Hanover* following the capture of the *Hanover* (II) by a French privateer on 29 March 1757 at the beginning of the Seven Years' War (Parham e*t al*, n.d.).

2.2 The *Hanover* (III) began service in Falmouth in 1758 under the command of Captain Williams. The ship continued to work the same run to Lisbon as its predecessor, and even managed to capture a French brigantine in 1759. Captain Joseph Sherbourne took command of the *Hanover* on 19 July 1761 and remained in that role until the ship sank (Parham e*t al*, n.d.).

2.3 There is a record of a verbal warning dating from 1763 to 'the captain of the packet-boat *Hanover* from Dover' issued by the Admiralty Office in Calais (1763) for breaching the treaty covering the carrying of mail.

2.4 The final voyage of the *Hanover* (III) began on 20 November 1763, leaving Lisbon for Falmouth carrying mail and a cargo of bullion of an estimated value of between £17,000 and £60,000 (Parham e*t al*, n.d.). It is not entirely clear how many people were on board at the time of the sinking as, besides the crew of 27, the number of passengers recorded varies between three (Historic England, 2016), 33 (Parham e*t al*, n.d.; Fletcher-Tomenius e*t al*, 2013), and 40 (Joseph Sherburn Ltd., n.d.).

2.5 The *Hanover* was wrecked in December 1763 when a south-south-west gale veered north-north-west and drove it into a small bay on the north Cornish coast, which was subsequently named Hanover Cove. Only three of the people on board survived, including two men and a boy (Parham e*t al*, n.d.).

2.6 News of the loss reached London on 11 December 1763 by which time a guard had been placed on the beach by John Knill, the Collector of Customs for the Port of St Ives, and George Bell, the 'Agent for paquets'. Within a week salvage work had begun on the wreck and, despite delays caused by weather, reports from the time suggest that all the bullion was recovered from the ship (Parham e*t al*, n.d.).

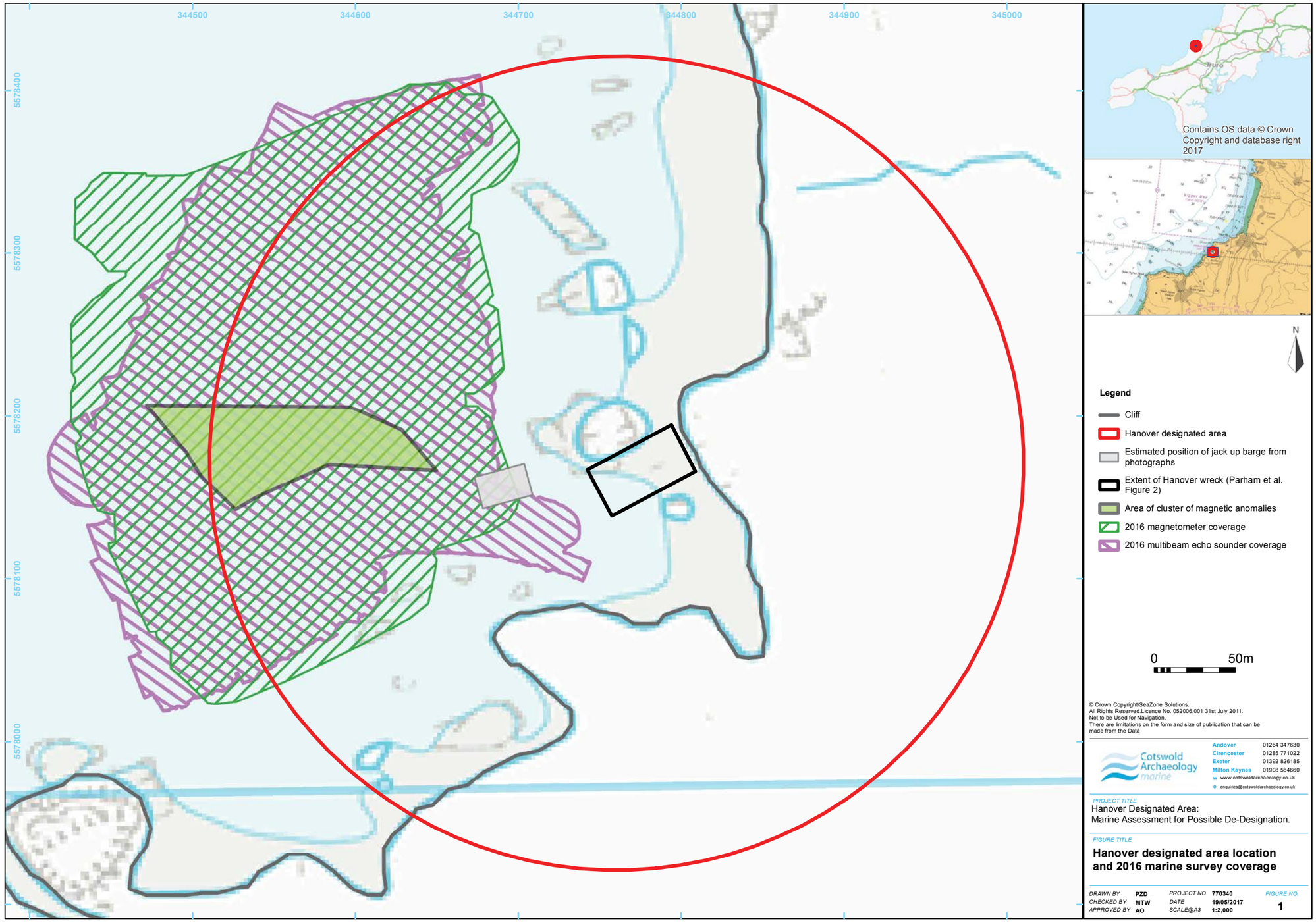
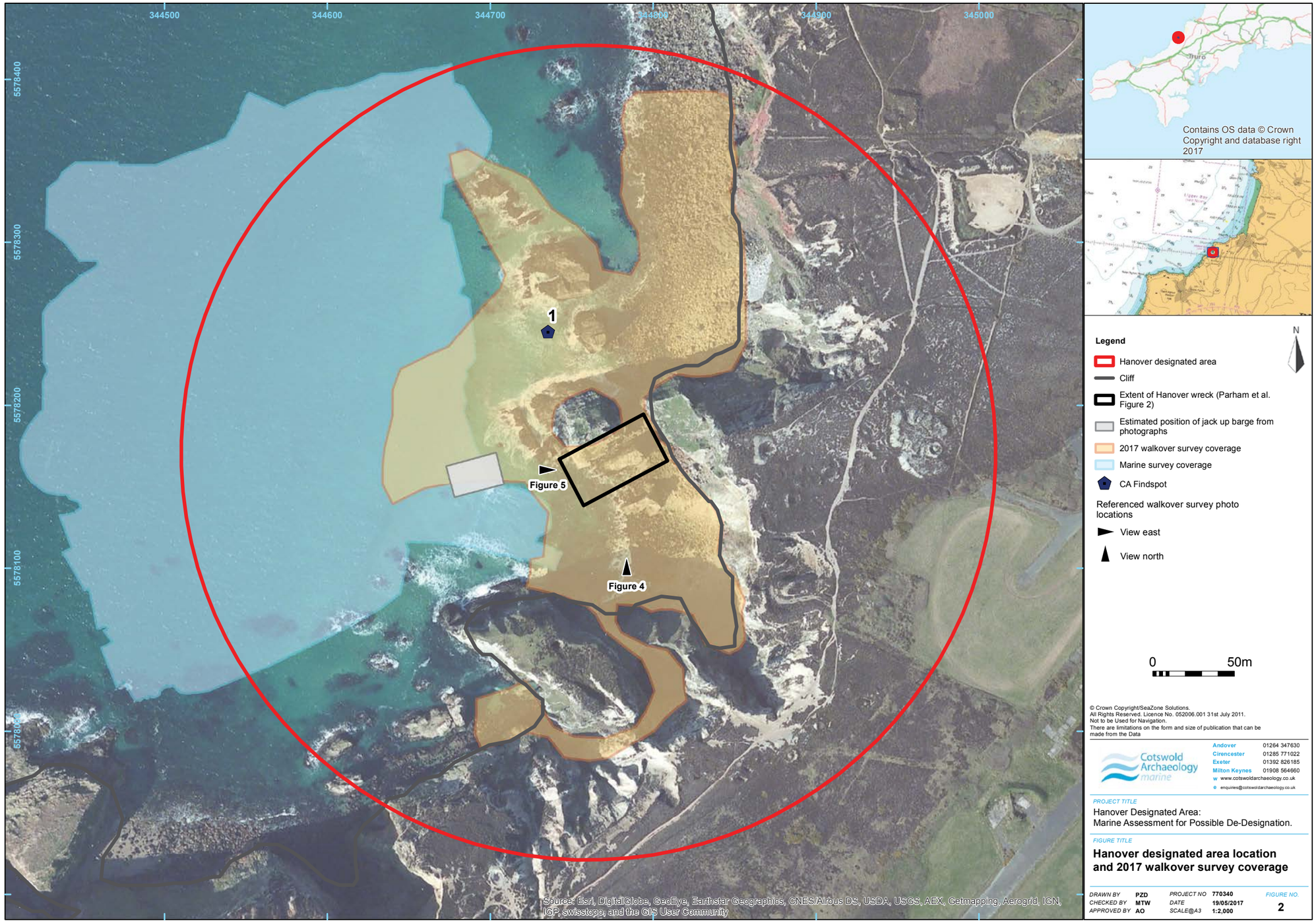


Fig. 1: *Hanover* designated area location and 2016 marine survey coverage



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PROJECT TITLE
Hanover Designated Area:
Marine Assessment for Possible De-Designation.

FIGURE TITLE
Hanover designated area location and 2017 walkover survey coverage

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CHECKED BY	MTW	DATE	19/05/2017		
APPROVED BY	AO	SCALE@A3	1:2,000		

Fig. 2: *Hanover* designated area location and 2017 walkover survey coverage

3 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Pre-designation

3.1 The wreck was located in 1994 by Colin Martin, who began salvaging the remains of the wreck under the auspices of Hydrasalve, a company he had specifically set up for this purpose (Fletcher-Tomenius e*t al*, 2013). Martin identified the wreck as that of the *Hanover* as he claimed to have recovered from the site a bronze bell, inscribed 'The Hanover Paquet 1757' and a mourning ring inscribed with the name of the deceased wife of the ship's master. Diver and magnetometer surveys conducted on the wreck site by the salvor in 1994 claimed to have found '*ribs, a full lower deck and part of one side*' of the vessel and a large amount of ferrous metal (Parham e*t al*, n.d.).

3.2 Hydrasalve consulted the Mary Rose Trust on salvage and conservation methodologies, who subsequently produced a report in February 1997 (Fletcher-Tomenius e*t al*, 2013). Hydrasalve then discussed with the Receiver of Wreck the legal requirements associated with recovering artefacts, and obtained a licence from the Crown Estate Commissioners to carry out work in the vicinity (Fletcher-Tomenius e*t al*, 2013). Investors were sought to fund the salvage work, with claims of a dividend return of 1000 percent after tax, stating that the ship had a cargo of gold and diamonds estimated at £50m (Joseph Sherburn Ltd., n.d.; Parham e*t al*, n.d.), but overlooking contemporary accounts that all the cargo had been recovered shortly after the sinking (Private Eye, 1998). Money was raised by Colin Martin through multiple companies to fund the Hydrasalve operations (Joseph Sherburn Ltd., n.d.).

3.3 In May 1997 an application was made by the Post Office, as owners of what was thought to be a packet ship, to designate the wreck. This application was turned down by the Department of National Heritage (shortly to be replaced by the Department of Culture, Media and Sport) on the grounds that the wreck's identity and precise location remained unclear (Fletcher-Tomenius e*t al*, 2013). Following this failed attempt at designation, Hydrasalve began salvage operations in July 1997 (Fletcher-Tomenius e*t al*, 2013).

3.4 A meeting of the Advisory Committee on Historic Wreck Sites (ACHWS) on 9 July 1997 decided that the Archaeological Diving Unit (ADU) should visit the *Hanover* site to assess it for possible designation (Department for Culture, Media and Sport, 1997). The ADU attempted to visit the wreck site on multiple occasions but was not granted access by Hydrasalve and was therefore unable to do so (Oxley, 1997). All their recommendations at the time were therefore derived from shore-based observations. A number of guns and a section of the ship's structure are known to have been recovered from the site, and there were reports of the use of explosives (Oxley, 1997; Devon & Cornwall Constabulary, 1997) before the site was granted an emergency designation under the Protection of Wrecks Act (1973) on 18 July 1997.

3.5 This designation order effectively halted Hydrasalve's operations on the site, who responded by seeking injunctive relief against the ACHWS in the High Court (Fletcher-Tomenius e*t al*, 2013; Prythergch, n.d.). On 22 July 1997 the High Court found in favour of Hydrasalve as salvor in possession. Two days after this ruling an undisclosed settlement was reached which allowed the designation to remain, but Hydrasalve were granted a licence to excavate the site (Fletcher-Tomenius e*t al*, 2013; Parham e*t al*, 2013).

3.6 Following the ADU's involvement with the site some doubt was cast on the provenance of the mourning ring and therefore the identification of the site. They noted that the ring, allegedly discovered during the initial investigation of the site in 1994, was not declared until two years later in 1996, stating that '*there was no evidence that the objects declared by Colin Martin had actually been removed from the supposed site*'. They also questioned how the wreck could have been identified as the *Hanover* at such an early stage (Archaeological Diving Unit, 1997).

Post-designation

3.7 As stated, following designation of the site a licence was granted to Colin Martin and Hydrasalve for the continued excavation of the wreck under the supervision of archaeologists Chris Underwood and David Parham appointed by the ACHWS and Howard Murray working for Hydrasalve (Department for Culture, Media and Sport, 1997; Parham e*t al*, n.d.). They noted that the site was initially cleared using two unmanned submersible pumps, with spoil discharged 100m seaward of the site. This removed sand to a depth of 2–5m over the site, with the wreck noted as lying in a maximum water depth of 8m during spring tides once uncovered (Parham e*t al*, n.d.; Parham e*t al*, 1997).

3.8 Parts of the ship's structure and equipment, ordnance, animal bone, human remains, pottery, personal items and other artefacts (Figure 3) were reported by Hydrasalve to have been identified on the wreck site. The ordnance retrieved from the wreck is notable for its quantity. A total of 60 guns were recovered, 59 of which were recorded as best as limited access provided by Hydrasalve allowed. These guns are thought to range widely in date but seem to date predominantly from the eighteenth century and include English guns (dated *c*.1700), Swedish Finbanker type 'A' guns, Swedish Finbanker type 'B' guns, Swedish/French naval guns of the mid-eighteenth century and 20 guns which could not be identified. This large number of guns is particularly unusual for a packet ship which would have had standing orders to out-sail rather than to engage with the enemy. This casts further doubt on the identification of this site, although it has been suggested that they may have been carried as cargo or possibly as ballast (Parham e*t al*, 2013). Two other explanations seem possible; either the site identification is incorrect, which aligns with other inconsistencies, or Martin may have claimed that cannon recovered from other sites came from this site.

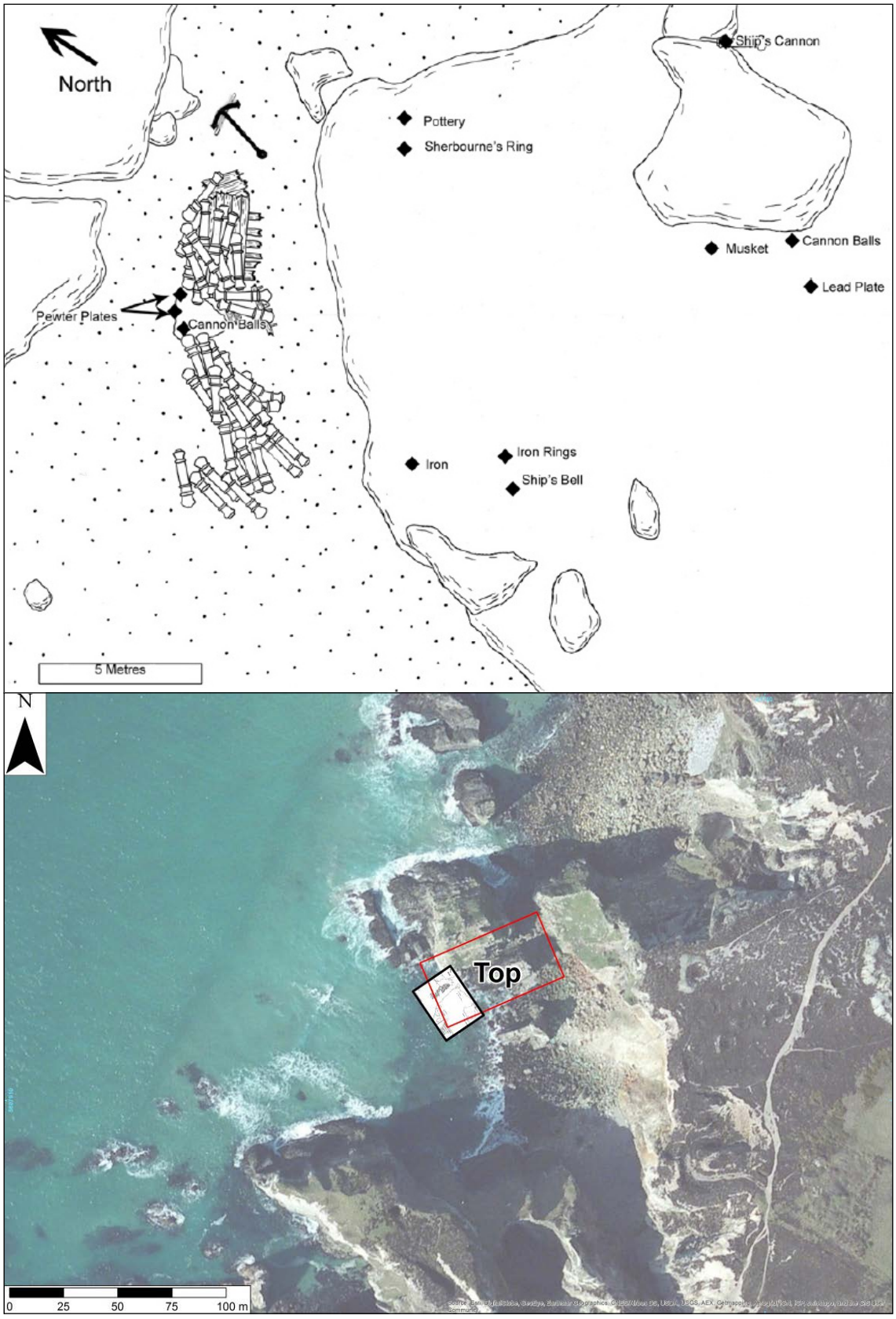

Fig. 3: *Hanover* site plan as reported by Hydrasalve (Parham *et al*, 2013) (top) and plan location overlaid (with orientation shown) on aerial photography (bottom). The area identified as the extent of wreck (Parham *et al*, 2013) is shown in red

3.9 A large rock located across the centre of the wreck coincides with the finds locations of the pewter plates and cannon balls among the cannon (Figure 3). It stands higher than the surrounding seabed, and may have been the rock that the ship struck. After striking the rock it is likely that the ship broke to pieces and subsequently fragmented very quickly in the rough seas, which is corroborated by the fragmentary nature of the surviving hull structure. The remains found by the salvors in the week following the accident are likely to have been pinned in place by the weight of the cannon. The relationship between the cannon pile and the fragmentary remains of the wreck structure (the first futtock and associated timbers) suggests that the cannon may have shifted in the hold, reducing the stability of the ship during wrecking (Parham e*t al*, n.d.).

3.10 Very little work has been undertaken on the site since 1997. Following the first season (1997), Hydrasalve faced delays caused by bad weather and court action which led to the need to refinance the company by selling director's shares (Parham e*t al*, n.d.). Hydrasalve Ltd. was fined for breaking company law (Private Eye, 1998) and was wound up in 1998 at considerable loss to investors (Fletcher-Tomenius e*t al*, 2013). Ownership of the recovered assemblage was transferred through several companies linked to Colin Martin, the first of which was Orca, which was then acquired by Deep Sea Explorations which ceased trading in 2004 (Fletcher-Tomenius e*t al*, 2013; Parham e*t al*, n.d.).

3.11 In 2012 the then licensee Michael Hamilton-Scott, undertook one dive and reported that the site was obscured by sand with no visible archaeological material (Scott, 2012).

4 CURRENT FIELDWORK METHODOLOGY

4.1 The reassessment of this site included a desk-based assessment followed by field investigations, comprising a marine geophysical survey and a foreshore/ intertidal walkover survey using hand-held metal detectors as appropriate. This section relates to the fieldwork elements of the project.

Marine geophysical survey

4.2 A marine geophysical survey of the designated area and its immediate environs was undertaken by MSDS Marine for Cotswold Archaeology on 11 October 2016 to support the desk-based research on the wreck site and to inform possible future diver survey. The survey was intended to utilise multibeam echo sounder, magnetometer, and sidescan sonar systems to identify anomalies which may be of archaeological interest for ground-truthing during diver operations (Appendix A).

4.3 The multibeam echo sounder data were collected using an R2Sonic 2020 with a beam width of 2.0° by 2.0°. The multibeam bathymetric data were primarily collected in an approximate east–west orientation, working from deep to shallow. Surveying parallel to the shoreline and from deep to shallow enables the surveyor to assess the succeeding survey line for depth and any obstructions thereby improving safety when working in shallow waters (Figure 1).

4.4 Magnetometer data were collected using a Marine Magnetics SeaSPY. Survey lines were run in a primarily east–west orientation (Figure 1); however allowances were made for topography and for physical obstacles. The magnetometer data were processed using Geosoft Oasis Montaj and Geometrics Magpick and focused on anomalies with an amplitude greater than 2 nano-Tesla (nT).

4.5 It had been planned to collect sidescan sonar data using a C-Max CM2 dual frequency (325/780kHz) system, with the 780kHz data used for archaeological interpretation. The sidescan sonar was not deployed, however, owing to a limited weather window in a survey area of shallow water with rocky outcroppings.

Foreshore and intertidal walkover survey

4.6 A foreshore and intertidal walkover survey using hand-held metal detectors was undertaken during the low water spring tide on 28 April 2017 to ascertain whether archaeological material remained within *Hanover* cove. This was done with the support of the vessel *Atlantis*, skippered by Matthew Robins, and involved putting two archaeologists ashore as the tide was going out. Undertaking the survey during the low water spring tide enabled the greatest

area of the foreshore to be surveyed while exposed. This ensured some overlap coverage between the intertidal and previously conducted marine geophysical surveys (Figure 2).

4.7 The survey was conducted using hand-held metal detectors wherever the terrain permitted and by visual inspection where the rocky nature of the foreshore prevented their use. Positioning and coverage during the survey were recorded using the Esri GIS Collector application. A full photographic record of the site was also produced.

Fig. 4: Hanover Cove looking north (see Fig. 2 for location) towards the centre of the designated area

5 RESULTS OF 2016/17 FIELDWORK

Marine geophysical survey

5.1 The results of the 2016 marine geophysical survey (Appendix A) identified two bathymetric anomalies (MB0001 and MB0002) located *c.* 60m north-west of where the wreck was recorded (Parham e*t al*, n.d.). Anomaly MB0001 is an elongated object measuring 3.4m long by 1.2m wide with a north-west by south-east orientation. Anomaly MB0002 is an elongated object measuring 4.7m long by 2.5m wide with an east/west orientation. Both anomalies are located in an area of rocky outcropping and there is the possibility that they are natural features projecting from the seabed. These anomalies are located in an area that is exposed at low tide and no archaeological material was identified at these locations during the walkover survey, so it is probable that these anomalies were rocky outcroppings.

Fig. 5: Detailed view looking east (see Fig. 2 for location) of area previously recorded as centre of wreck debris showing large number of boulders

5.2 Approximately 40m west of the bathymetric anomalies there is a cluster of fourteen magnetic anomalies (MAG0001–MAG0014) ranging in amplitude from 2.01nT to 10.67nT (Appendix A). These anomalies are located on the western edge of the designated area and form a cluster covering an area measuring *c.* 180m from east to west and *c.* 70m from north to south (Figure 1). It is unclear what these anomalies represent but no surface expression was identified for any of them in the bathymetric data, suggesting they are probably buried. The absence of other magnetic anomalies within the survey would

suggest that these anomalies are an associated group than a wider spread of modern debris. There are several possible explanations for these anomalies which are discussed below in section 7.

Intertidal walkover survey

5.3 The foreshore and intertidal walkover survey covered an area of *c.* 4.3ha (Figure 2). The foreshore covered by the walkover survey was comprised primarily of large to medium sized boulders, with a limited sandy area at the south-east limit of the site. Owing to the large number of crevasses and rock pools (Figure 4) it is possible that small archaeological items may have been overlooked although the limited sand coverage is unlikely to conceal substantial remains of a buried wreck in this area.

5.4 The area recorded as containing the most wreck material (Figure 3) and previously described as being buried under 2–5m of sand is now a boulder field similar to the rest of the beach. No wreck material was observed in this location (Figure 5).

5.5 Debris, both historic and modern, was mostly absent from the designated area with the occasional piece of fibreglass or other modern debris observed. A single object was observed *c.* 70m north of the centre of the designated area (Figure 2: CA1). This object was located in an area that was still submerged at low tide and could not be examined closely, however owing to the good through-water visibility it could be seen to be a partially buried elongated object with estimated dimensions of *c.* 50cm long with a 5cm diameter, and may have been a cable (Figure 6).

Fig. 6: CA1: elongated object circled in red to right of rocky outcropping, view looking east

6 ASSESSMENT OF SIGNIFICANCE

Background to designation

6.1 The following assessment of the *Hanover* designated area is based on the non-statutory criteria set out by Historic England for choosing which wrecks to designate (English Heritage, 2010)

Current assessment of significance

Period

6.2 If this is the *Hanover* (III) then it is likely to have been built in London in 1757 and was in service from 1758 until its loss in 1763 (Parham e*t al*, 2013). Vessels from this period are rare and are expected to be of special interest (Historic England, 2016).

Rarity

6.3 Records suggest the *Hanover* (III) was a 100ft, two-masted square rigger brigantine (Parham e*t al*, 2013). Although packet ships were common during this period, if this is the *Hanover* (III), it is the only recorded site in UK waters known at present. However, owing to the weight of cannon suggested in the hold, it has been proposed that *Hanover* (III) was originally a merchant vessel which was used to fill the place of the captured *Hanover* (II) (Parham e*t al*, 2013). If this were the case, this site would not represent a purpose-built packet ship. Sadly there are no records of the ship's construction and no corroborating construction details were recorded during the salvage.

Documentation

6.4 Although there is little documentary evidence relating to the construction of *Hanover* (III), the wrecking and initial salvage of the vessel in 1763 are well documented by contemporary sources.

Group Value

6.5 No records have been identified which suggest the *Hanover* is part of a wider group of wrecks in the area or associated with any nearby heritage assets.

Survival/condition

6.6 No work has been carried out on the site since 1997 (Parham *et al*, n.d.), and a visit by the then licensee Michael Hamilton-Scott in 2012 did not identify any archaeological material (Scott, 2012). A second season of salvaging was planned by Hydrasalve for 1998 but did not take place (Parham *et al*, n.d.). It is unclear if Hydrasalve were able to remove all the wreck material they identified from the seabed or if there are still archaeological remains buried in

the sand. The results of the geophysical survey do suggest that there are ferrous objects buried in the sand within the designated area which could represent archaeological material, however this cannot be confirmed without excavation.

Fragility/vulnerability

6.7 The wreck site is located in a high energy environment and has already been subject to invasive salvage operations. If there are remains exposed on the seabed they would be considered highly fragile and very vulnerable. The geophysical and walkover surveys however suggest this is not the case. The walkover survey revealed that the area previously reported as the wreck site, buried under *c.* 2–5m of sand, is now an exposed boulder field and no archaeological material was observed in this area.

6.8 It is possible that the location of the wreck provided by Hydrasalve is inaccurate and that it was in fact located further offshore. This would coincide with the area of sandy seabed identified in the marine geophysics survey and observed during the walkover survey. It would also correspond more closely to the position of the jack-up barge shown in use by Hydrasalve (Figure 7). This picture also shows some of the beach exposed near the cliff which coincides with the area reported to be the focus of the wreck (Parham *et al*, n.d.), which conflicts with the report that the site was underwater at low tide. It should be

Fig. 7: Hydrasalve jack-up barge in position in Hanover Cove (Parham *et al*, n.d.). Note that part of the beach is exposed near the cliff

noted that the area corresponding to the estimated position of the jack-up barge was covered by both the marine survey and the intertidal walkover survey (Figure 2).

Diversity

6.9 There is no clear evidence that there was a standard ship construction for packet ships during this period; it has been suggested that a variety of designs were employed for this purpose (Archaeological Diving Unit, 2000). There is also little evidence of how the *Hanover* itself was constructed. As such, any additional evidence regarding the vessel's construction would help inform our understanding of the type of vessels used in this role.

Potential

6.10 It is clear that a considerable amount of archaeological material has been removed from the wreck site as a result of salvage operations. It appears that the excavations and post-excavation analysis were not conducted to professional standards and any recording of the site and of the finds was limited as evidenced by limited access by specialists to the cannon (Parham *et al*, n.d.) and questions raised concerning the recorded position of the wreck. It is less clear how much of the wreck is left and in what condition. A magnetometer survey carried out to support this report indicates a cluster of ferrous objects is located *c.* 100m west of where the wreck was recorded, however intrusive archaeological investigation would be required to determine what these represent.

7 DISCUSSION

7.1 Archival research indicates that a considerable amount of archaeological material was removed from the designated area during the salvage operations. The removal of a layer of sand, described as between 2m and 5m thick (Parham *et al*, 1997; Parham *et al*, n.d.), has reportedly hampered further investigations of the wreck following the conclusion of Hydrasalve's work on the site in 1997 as it has prevented access to any remaining wreck material. The ADU suggested that it was unlikely that any significant wreck material remained buried on the site, and that any material that does survive is likely to be fragmentary or uncontextualised (Archaeological Diving Unit, 2000).

7.2 This has been corroborated by the walkover survey which did not locate any extant remains on the surface in the foreshore or intertidal areas. Moreover, the lack of sand in the reported location of the site, noted during this walkover survey, when compared with the reports of the removal of 2–5m overburden during the excavation, suggests that the recorded location is erroneous.

7.3 A cluster of 14 magnetic anomalies (MAG0001–MAG0014) was recorded during the marine geophysical survey undertaken for this reassessment (Appendix A), the identity of which remains unknown as they were buried under the seabed sand. In addition, two potential targets were identified on the surface of the seabed in the multibeam data; these were investigated during the walkover survey and nothing of note was found.

7.4 The cluster of magnetic anomalies covers an area measuring *c.* 180m east-west by *c.* 70m north/south. It is located *c.* 100m west of where the salvage operations (Figure 1) were recorded as having taken place (Parham *et al*, n.d.), and *c.* 30m west of the position of the jack-up barge as estimated from photographs (Figure 1 and Figure 7). The nature of these objects cannot be determined without intrusive investigation, but the absence of magnetic anomalies in other locations within the designated area would suggest that these may be an associated group for which there are several possible explanations.

7.5 These magnetic anomalies may represent a debris field associated with the wrecking of the *Hanover*, material washed overboard during the wrecking event, or material relocated by the high energy environment. Reports from the period described coins being washed up on the beach.

7.6 Given the discrepancies between reported and observed evidence for the location of the wreck it seems possible, or indeed probable, that the position of the wreck reported by Hydrasalve is inaccurate. These inconsistencies include:

- reports that several metres of sand needed to be removed when the reported area was observed to largely comprise rocky outcrops and boulders;

- reports that the site was under 3–4m of water at low tide (Parham *et al*, n.d.) when in fact the reported area of the wreck was dry during the recent foreshore survey and also appears dry in the photograph of the jack-up barge (Figure 7); and

- the photograph of the jack-up barge appears to place it some distance from the reported location of the site (Figure 7).

7.7 This evidence combined would appear to support the hypothesis that the wreck was in fact located further off shore. If this were the case, then these inconsistencies are resolved, which might suggest that these anomalies may be associated with buried wreck material.

7.8 There is a possibility that these anomalies represent a second wreck, buried in the sand at this location. Considering the doubt cast by the ADU regarding the provenance of the ring and the bell used to identify the wreck as that of the *Hanover* (Archaeological Diving Unit, 1997) it may be that this buried material is in fact the wreck of the *Hanover*, and the salvaged site was another ship. This would perhaps explain why so many guns have been recovered from a site assumed to be a packet ship with orders not to engage the enemy and therefore expected to carry fewer guns (Parham *et al*, n.d.).

7.9 Alternatively these anomalies may not represent *in situ* archaeological material. It is known that Hydrasalve used two unmanned submersible pumps to clear the 2–5m depth of sand overburden from the site, which discharged the sand *c.* 100m seaward (Parham *et al*, n.d.). It is therefore possible that the cluster of magnetic anomalies represents finds from the *Hanover* which have been redeposited on the spoil heap. If this is the case, the loss of context may have reduced the significance of these buried objects, although they could still provide additional information on the wreck.

7.10 Finally it is possible that these objects represent modern debris, such as scrap material, possibly dumped at the end of the salvage operations. This scrap may include items such as grid pegs or other ferrous refuse.

8 CONCLUSION

8.1 Although there is a possibility that the buried anomalies, recorded in the magnetometer survey, may be archaeological they may equally be modern; without further investigation it is impossible to say. The concentration and amplitudes of the anomalies, however, would suggest that these are dispersed, if associated, objects rather than a cohesive cannon pile or archaeological site. These anomalies therefore are more likely to represent either the remains of a debris field, redeposited and therefore uncontextualised artefacts from the excavation, or modern debris. Restricted access to the site owing to shallow water and exposed rocks renders further marine survey work neither productive nor practical.

8.2 The general absence of debris, either historic or modern, on the foreshore would suggest that there is no wreck structure present within the intertidal or foreshore zones of the designated area, including the area previously reported as the centre of the concentration of wreck material. It is probable therefore that, if any archaeological material does remain *in situ*, it is most likely to be small, isolated objects that have either fallen into crevasses or that have been buried in the sand at the mouth of the cove. No wreck material was identified on the surface by the intertidal walkover survey within the designated area, and the rocky nature of the foreshore suggests that it is unlikely that there is any significant buried wreck material in this area.

8.3 It would appear that the most likely scenario is that the detected anomalies represent either modern detritus dumped at the end of the salvage operations, or archaeological material redeposited during the excavations, possibly while the unmanned pumps were in operation removing the overburden.

8.4 Given the discrepancies regarding the reported location of the wreck there is a possibility that these anomalies represent *in situ* archaeological remains. As such, they could possibly represent further elements of the *Hanover* or a different wreck entirely. Moreover, given the doubts regarding the provenance of the bell and the mourning ring and the disproportionate number of cannon recovered from the site it is possible that this is the actual site of the *Hanover* and the salvage operations targeted a different wreck. These scenarios, however, seem less convincing as the magnetometer readings suggest a fragmented rather than a cohesive deposit.

8.5 Owing to a number of significant factors the need for the continued designation of this site is questionable. These include:

- The considerable number of archaeological finds removed during the salvage operations;
- the lack of archaeological material observed during both the geophysical and walkover surveys within the designated area;

- the doubts that remain concerning the provenance of the items used to identify the site; and

- the apparent discrepancy regarding the reported location of the site.

8.6 If it is considered that the designation should remain, then consideration should be given to relocating the centre of the designated area *c.* 150m west to align with the magnetic anomalies. In this case a reduction in the radius of the designated area may also be appropriate as no notable finds were made during the walkover survey.

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APPENDIX A: GEOPHYSICAL SURVEY REPORT

CONTENTS

LIST OF FIGURES

1.0 Introduction

1.0.1 MSDS Marine Ltd (MSDS) was contracted by Cotswold Archaeology (CA) to undertake a geophysical and hydrographic survey of the *Hanover* protected wreck. The wreck lies within Hanover Cove on the north coast of Cornwall.

1.0.2 The survey was undertaken to re-assess the site to determine whether its continued designation was warranted. The project was commissioned by Historic England (HE)–project number 7375. The results of the survey will be used to identify any potential anomalies that warrant further investigation through ground-truthing, which will ultimately inform the designation reassessment.

1.0.3 The survey comprised multibeam echo sounder, sidescan sonar, and magnetometer. The data were processed and an archaeological review undertaken.

1.0.4 Survey operations took place on the 11 October 2016 on-board *Atlantis* based in Newquay and skippered by Matthew Robins. The vessel was chosen for its close proximity to the survey area and the local knowledge of the skipper.

1.0.5 The following personnel were on board during the survey operation:

Table 1: Personnel on site

Name	**Organisation**	**Role**
Matthew Robins	*Atlantis*	Skipper
Mark James	MSDS Marine Ltd	Surveyor
Matt King	Swathe Services	Surveyor
Simon Mitchell	Independent ROV technician	Observer

2.0 Project location and conditions

2.1 Project location

2.1.1 The *Hanover* protected wreck site lies within Hanover Cove and is bounded by a designated area 250m in radius from the co-ordinate below, taken from Statutory Instrument 1997/1718;

Table 2: *Hanover* wreck designated area (WGS84)

Latitude	**Longitude**
50.33516181	-5.18137630

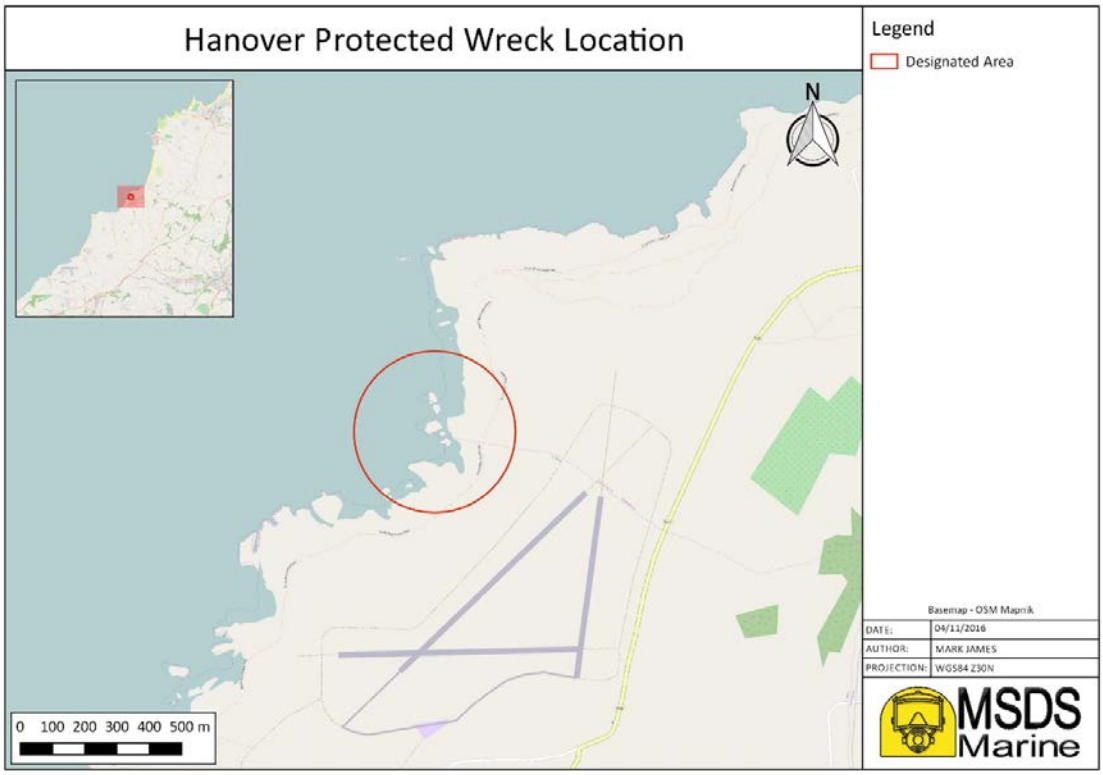


Fig. 1: *Hanover* Protected Wreck Location

2.1.2 All data were positioned in WGS84 Z30N and all outputs are presented in this format. All depths were reduced to Ordnance Datum (OD).

2.1.3 The minimum specification for coverage was the navigable section of the designated area. This was determined by the skipper and his assessment of the risk to his vessel and the submerged survey equipment.

2.1.4 The water depth in the designated area ranges from 0m to 8m. The eastward limit of the survey was largely dictated by accessibility relating to the depth of water and the tide. A large proportion of the designated area lies on land or in areas that are inaccessible during most states of tide and in unfavourable sea conditions.

2.1.5 The mobilisation was undertaken at Newquay harbour which is tidal, and the vessel loading area dries out for long periods of time. No multibeam equipment could therefore be deployed until the vessel was at sea as the draft of the equipment is greater than that of the vessel.

2.2 Conditions

2.2.1 The forecast conditions were 20mph easterly winds with 0.5–1m of swell which was borderline suitable survey conditions for the area. The weather and sea state had been monitored over the preceding days and it was noted that

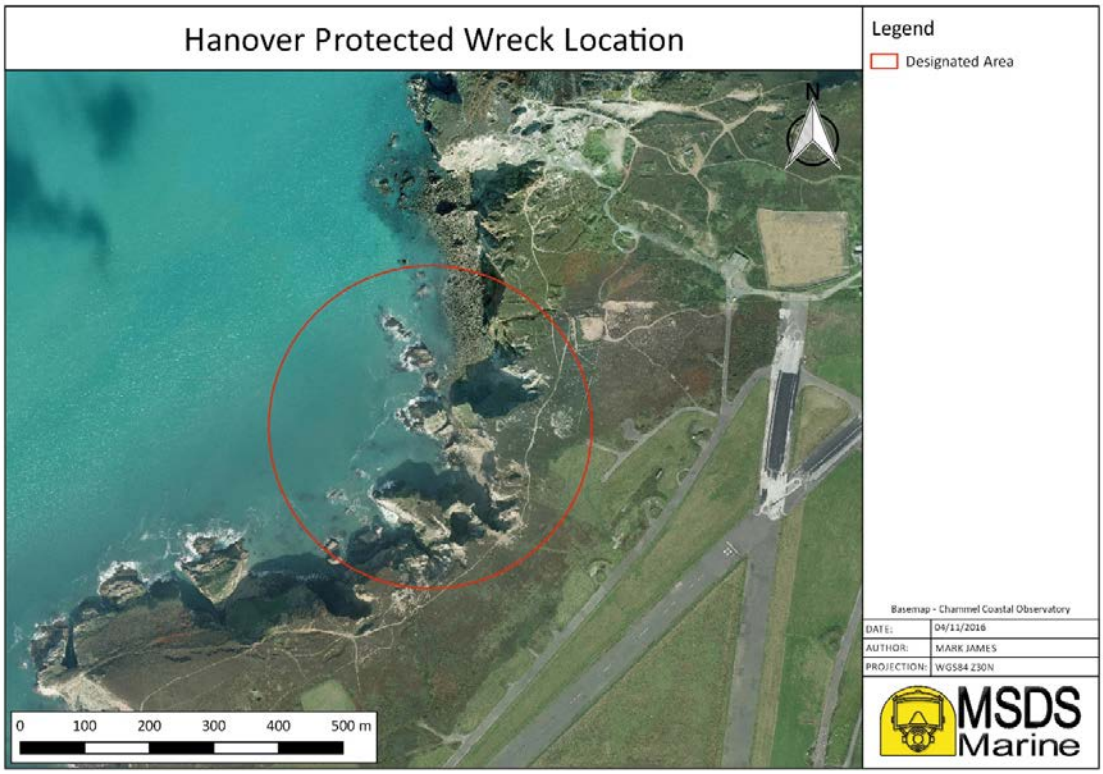


Fig. 2: *Hanover* wreck location

conditions were more moderate than forecast until mid-afternoon and then generally worse than forecast afterwards.

2.2.2 Although a sidescan sonar survey had originally been intended, poor weather and shallow conditions prevented it from being deployed. The focus of this survey was therefore the acquisition of multibeam echo-sounder and magnetometer data.

3.0 Technical specifications and methodology

3.0.1 The equipment for the survey was chosen to provide high resolution data that could be interpreted archaeologically and capable of mobilisation onto a vessel of opportunity working in very shallow water.

3.1 Vessel

3.1.1 The survey vessel, *Atlantis*, was mobilised and operated out of Newquay harbour. *Atlantis* is an offshore 105 mono-hull primarily used for fishing charters. It has ample deck and cabin space for survey equipment and provided a stable platform for survey operations.

3.2 Positioning and motion

3.2.1 Positioning and motion for the multibeam was controlled using an Applanix POS MV WaveMaster with real time 3G real time kinematic (RTK) corrections. The Applanix system with RTK corrections can produce positional accuracy of >0.1m, roll and pitch to 0.02°, heading to 0.03° and heave to 2cm or 2%.

3.2.2 A position string was exported from the Applanix system to provide positional data for the sidescan sonar and the magnetometer.

3.2.3 Where acquired the raw GPS data was post-processed in *POSPac* to improve absolute accuracy. *POSPac* uses reference station data, alongside the logged GPS and motion data from the survey to produce a more accurate position resolution.

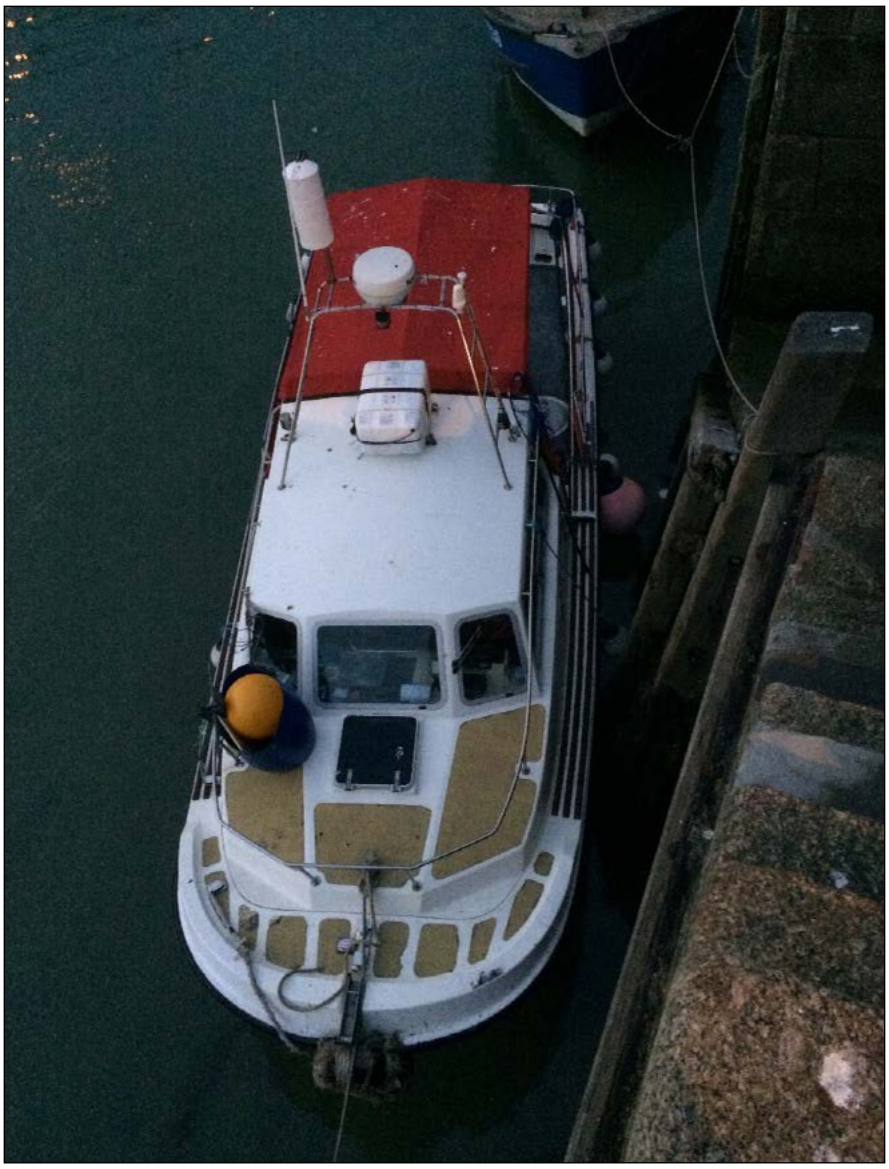


Fig. 3: Survey vessel *Atlantis*

3.3 Multibeam echo sounder

3.3.1 An R2Sonic 2020 broadband multibeam echo sounder was used for the collection of bathymetric data; the 2020 is a compact unit, ideal for surveying in very shallow water and where deployment at sea is required.

3.3.2 The system operates at 400 kHz with a beam width of 2.0° x 2.0°. Whilst larger than the commonly used 2022 and 2024, owing to the shallow water depth of the survey area the overall beam footprint still remains small. The 2020 has a real-time user selectable swath sector of 10° to 130° and a range resolution of up to 1.25cm. These features ensure high resolution, high density data collection, the parameters of which can be adjusted in real time to ensure optimum ensonification of the seabed and any features of potential archaeological interest.

3.3.3 The multibeam was mobilised onto the vessel with the use of a rigid metal frame incorporating the Inertial Measurement Unit (IMU) and the antennas. By mounting the multibeam, the IMU and the antennas on the same rigid frame common errors associated with vessels of opportunity such as offset errors and hull flex were reduced to a minimum.

3.3.4 Following data collection a patch test was undertaken to determine any offsets between the multibeam sensor head, the IMU and the heading sensor. Offset corrections were then applied to the dataset to minimise errors in the positioning and overlap of the data.

3.3.5 Bathymetric data were collected by running predetermined lines based on the depth of water to achieve a data overlap of 50%. The deeper the water the wider the coverage at a fixed swath sector, although beam footprint will increase and data density will decrease. As the data were recorded they were also displayed in real time; this allowed online quality control to be carried out and lines re-run or filled in where required.

3.3.6 The multibeam bathymetric data were primarily collected in an approximate east–west orientation, working from deep to shallow. Surveying parallel to the shoreline and from deep to shallow enables the surveyor to assess the succeeding survey line for depth and any obstructions thereby improving safety when working in shallow waters.

3.3.7 Owing to the hazardous nature of the survey area it was necessary to run the pre-determined lines where the skipper felt it was safe to do so. Where possible, any missing data were then carefully in-filled.

3.3.8 Sound velocity was recorded continuously at the multibeam head with a Valeport mini sound velocity sensor (SVS) and at intervals through the water column with a Valeport sound velocity profiler (SVP). Sound velocity

measurements are required, and applied to the bathymetric data, in order to correct errors that may be created due to variations in the speed of sound through the water column.

3.3.9 All line planning and multibeam data collection was undertaken in HyPack HySweep.

3.3.10 Following data collection, patch test and tide corrections were applied within HyPack HySweep and the data exported as individual lines in XYZ format. The lines of data were then cleaned in various programs including HySweep, Fledermaus and Cloud Compare to remove noise, data artefact and unwanted features such as fish.

3.3.11 Once the data has been cleaned the lines were imported into software including Fledermaus and Cloud Compare where the data can be visualised and effects such as shading applied to help highlight potential anthropogenic features. Interpretation was undertaken using the complete point cloud, however for the purposes of visualisation in this report the data have been gridded to 0.1m and a surface applied.

3.3.12 A georeferenced bathymetric image was produced along with the positions and images of potential anthropogenic anomalies. All depths have been reduced to Ordnance Datum (OD).

3.4 Magnetometer

3.4.1 The magnetometer used for the survey was a Marine Magnetics SeaSPY, a pulsed Overhauser magnetometer. The SeaSPY is suited to the detection of ferrous materials on or below the seabed and is supplied with a built in altimeter to enable it to be flown a set distance from the seabed.

3.4.2 As with the sidescan sonar, the magnetometer was mounted on a floating towing frame which holds the towfish 0.5m below the surface. The towfish is towed far enough off the stern to minimise the detection of the survey vessel's ferrous components.

3.4.3 The position of the magnetometer was calculated by applying the offset of the tow point from the GPS antenna and calculating the layback. Layback was calculated by measuring the amount of cable layout and the depth of the sensor.

3.4.4 Data were collected following a pre-determined line plan based on the required detection parameters and the height at which the magnetometer could be towed safely above the seabed. The SeaSPY has a detection slant range of 7.5m for 4.5kg of iron, using a towed height of 3m which equates to *c.* 6.9m on the seabed. Therefore a magnetometer tow height of 3m and 10m line spacing was considered appropriate for the detection of 4.5kg of iron on the surface. It should be noted that buried ferrous material cannot be detected

as reliably. Any magnetic anomalies representing buried material that are potentially still *in situ* are likely to be larger iron artefacts such as anchors and cannon, as such line spacing was adjusted as required to avoid hazards and ensure completion within the allotted tidal window.

3.4.5 The magnetometer data were primarily collected in an approximately east–west orientation. It is usual with caesium vapour magnetometer surveys to run in a north/south orientation, however this is not required with Overhauser magnetometers. The magnetometer was deployed with the multibeam echo sounder when it was possible to run pre-determined lines.

3.4.6 Data were collected using Marine Magnetics SeaLINK software and processed using Geosoft Oasis Montaj and Geometrics Magpick in which it was viewed to remove any data spikes to build a clean total field. A background magnetic field was created and subtracted from the clean total field to produce a residual magnetic field from which magnetic anomalies over 2nT were identified. The position and intensity of identified magnetic anomalies were viewed alongside the sidescan sonar and multibeam in order to remove anomalies of likely modern origin.

Fig. 4: Magnetometer and float arrangement towed behind the vessel

3.5 Aerial photography

3.5.1 Georeferenced aerial photography of the designated area from 2008, 2010 and 2013 was obtained from the Channel Coastal Observatory with the aim of assessing changes in sand levels and to establish the likelihood of the wreck remains being buried.

3.5.2 The aerial photographs were loaded into a geographic information system (GIS) and compared alongside each other. Prominent features such as rocks were identified to aid interpretation.

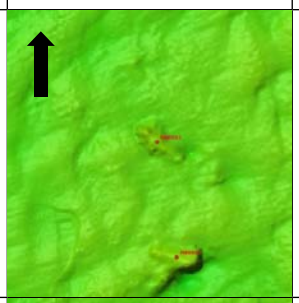
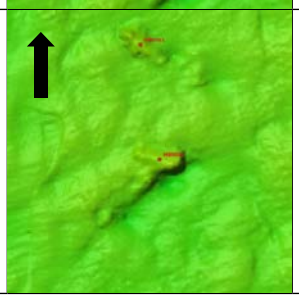
4.0 Results

4.1 Multibeam

4.1.1 Shallower areas were surveyed when the tide was highest to ensure that as much of the designated area as possible was surveyed. The presence of large and submerged hazards prevented the coverage of all underwater areas.

4.1.2 Two anomalies of potential archaeological interest were identified in the multibeam data, however it is highly likely that these features represent rocky outcroppings that have been partially uncovered due to sand movement.

Table 3: Multibeam anomalies

Multibeam anomalies				
ID	**Image**	**East**	**North**	**Description**
MB0001		344684.765	5578198.518	Anomaly MB0001 is a feature measuring 3.4m x 1.2m. Although of an irregular shape there is a linear element that could indicate potential anthropogenic origin.
MB0002		344685.863	5578192.009	Anomaly MB0002 is a feature made up of a linear anomaly 4.7m in length with another linear feature 2.5m in length at the northern end. The smaller linear feature has a curved element to the eastern end..

4.1.3 The identified anomalies are in very shallow water, between 1m and 4m. Aerial photography from 2013 shows these locations almost dry although the state of the tide is unknown. Local boat skippers have indicated that it is possible to walk out 'quite far' on a low spring tide.

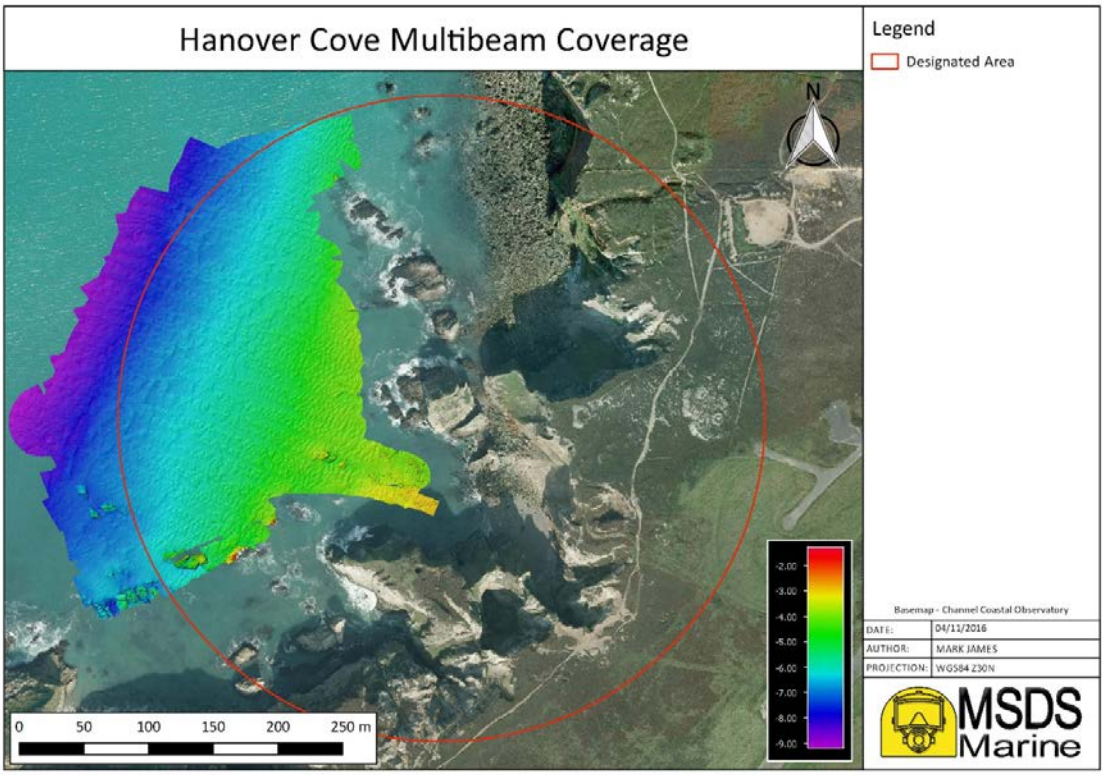


Fig. 5: Hanover Cove multibeam coverage

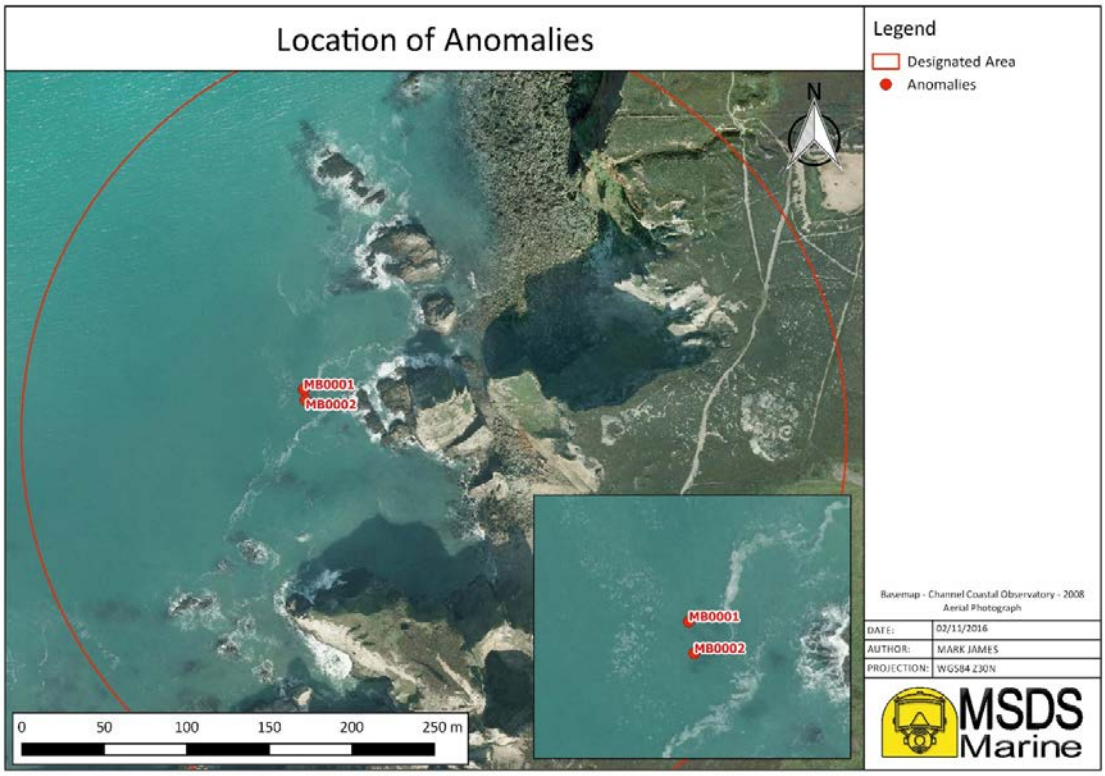


Fig. 6: Location of anomalies

4.2 Magnetometer

4.2.1 The magnetometer coverage was similar to the multibeam as it remained deployed for the majority of the time whilst bathymetric data collection was underway. Line spacing varied between 10 and 20m dependant on the lines required for the multibeam. A 10m survey line spacing was considered sufficient to achieve the aims of the project as this should allow ferrous objects of 4.5kg or greater to be detected.

4.2.2 To mitigate the increase in line spacing in some areas, anomalies with amplitudes greater than 2nT have been plotted to establish their distribution over the survey area and identify any potential trends.

4.2.3 A total of fourteen magnetic anomalies were identified within the survey area.

Table 4: Magnetic anomalies

Magnetic Anomalies			
ID	**Amplitude (nT)**	**East**	**North**
MAG0001	2.01	344472	5578204
MAG0002	2.02	344526	5578144
MAG0003	2.86	344497	5578178
MAG0004	2.89	344650	5578167
MAG0005	3.01	344538	5578151
MAG0006	3.6	344506	5578163
MAG0007	5.46	344526	5578171
MAG0008	6.03	344597	5578205
MAG0009	8.17	344583	5578171
MAG0010	8.63	344628	5578191
MAG0011	9.77	344613	5578185
MAG0012	10.54	344602	5578180
MAG0013	10.55	344574	5578194
MAG0014	10.67	344564	5578189

4.2.4 Of the fourteen anomalies identified, eleven were within the designated area and three outside. The anomalies are all located to the west of the designated area with all those over 6nT within a 30m radius of each other. The remainder of the contacts between 2nT and 6nT lie to the east and west.

4.2.5 With a wreck, albeit largely salvaged, known to be in the area the concentration of magnetic anomalies are highly likely to represent material from either the wreck itself or the salvage works. This interpretation is reinforced by the lack of magnetic anomalies over the remainder of the survey area.

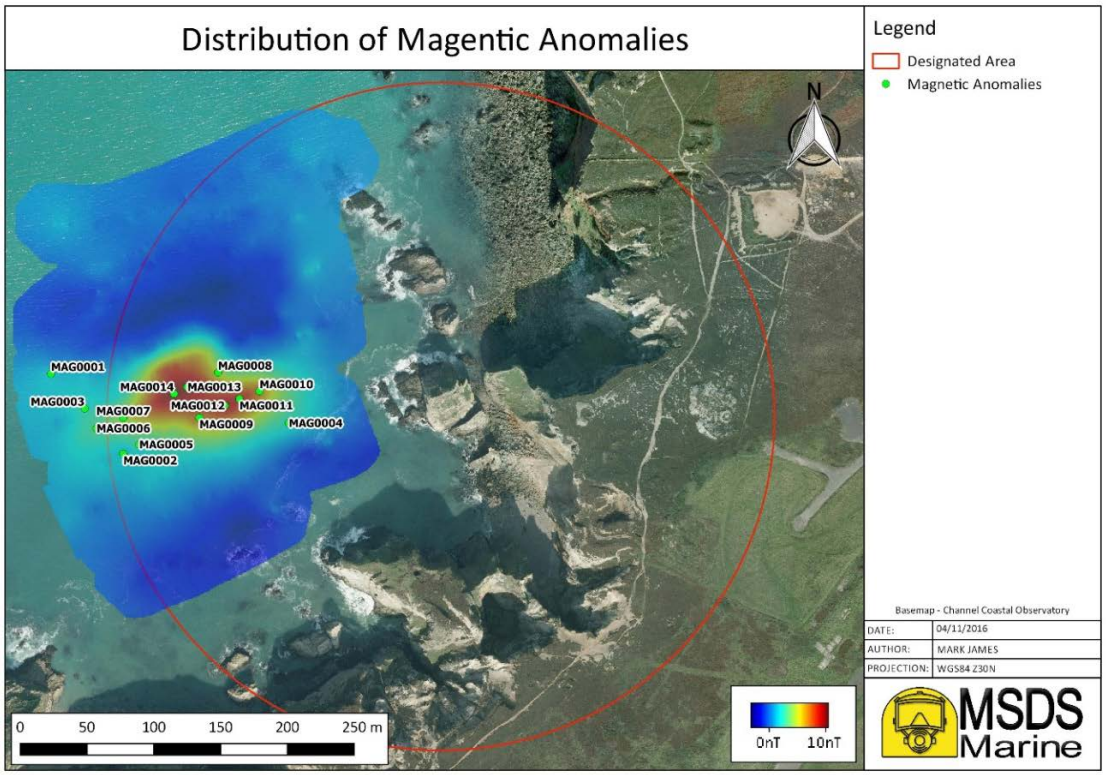


Fig. 7: Distribution of magnetic anomalies

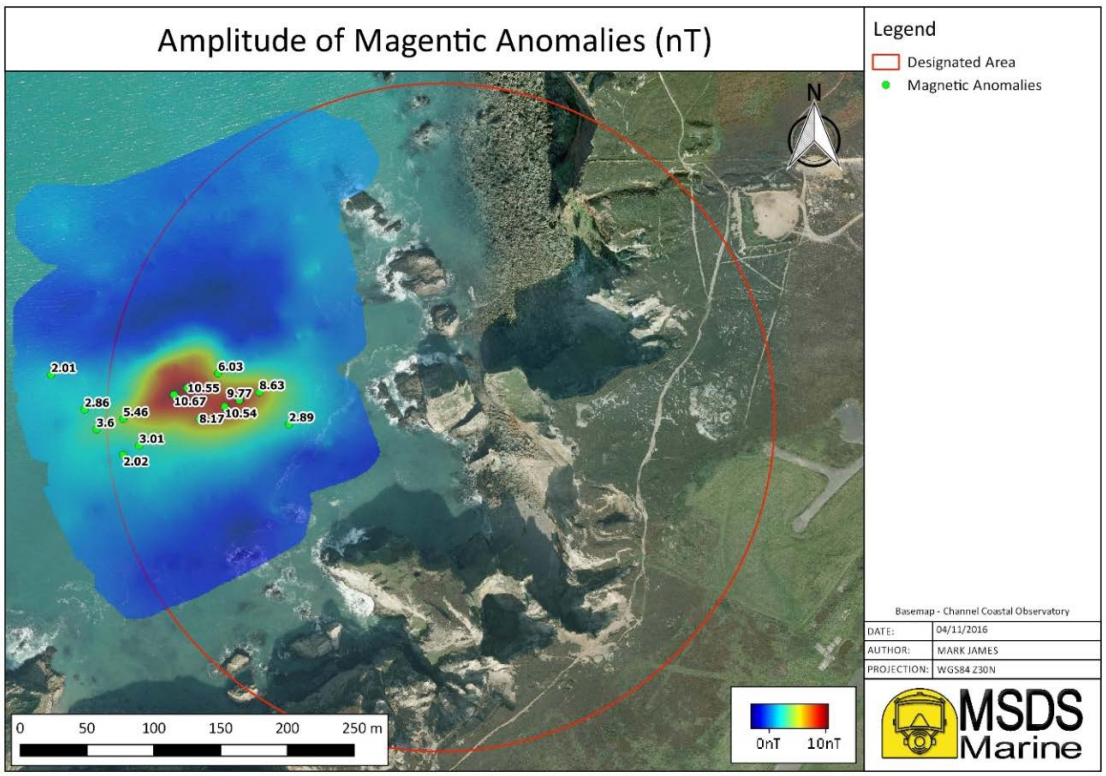


Fig. 8: Amplitude of magnetic anomalies

4.2.6 None of the identified magnetic anomalies correspond with anomalies identified in the multibeam data. This suggests that the magnetic anomalies are either very small or buried. If these anomalies are associated with wreck material and debris they are likely to be buried under sand. Although rocky outcroppings have been identified near the bathymetric anomalies, the anomalies' location *c.* 40m east of the MAG0004 leaves open the possibility that they may be debris trapped amongst the rocks.

4.2.7 Magnetic data does not provide a 'visual' image of the anomaly, only an amplitude, as such it is not possible to identify anomalies only to ascertain that ferrous material may exist on, or below, the seabed.

4.3 Aerial photography

4.3.1 The reduced visibility of submerged rocks in the aerial photography between 2008 and 2010 suggests a possible accumulation of sand to the west of the reported wreck site. It should be noted that the aerial photographs have been taken at different states of the tide, although the water clarity is such that sub-surface features can be identified.

4.3.2 One area where the rocks are more visible in 2008 than in 2010 has been highlighted in the images above (Figure 9 and Figure 10). This is suggestive of changes in sand levels.

4.3.3 It must be noted, however, that the tide is higher in the 2008 image than in the 2010 image so direct comparisons are more difficult. However, even with deeper water a number of rocks are visible in the selected area of the 2008 image including one just breaking the surface. This rock is more exposed due to the lower water level in the 2010 image, but none of the other rocks are visible suggesting an increase in sand levels.

4.3.4 Although the tide is noticeably lower in the 2013 image there appears to have been little change in the sand levels since 2010, based on the visibility of features such as rocks. The 2013 image illustrates not only that at least two-thirds of the designated area can be accessed on foot, but also how shallow the water depth can be over the remainder of the site.

4.3.5 The only notable difference between the 2010 and 2013 images is that the rocky area of the beach appears to extend further out to sea in 2013. This is likely to represent fallen debris as a result of cliff erosion.

4.3.6 Whilst no aerial photography is available from 2016, it has been possible to use the multibeam data to identify stationery seabed features such as rocks to assess the difference in sand levels between 2013 and 2016.

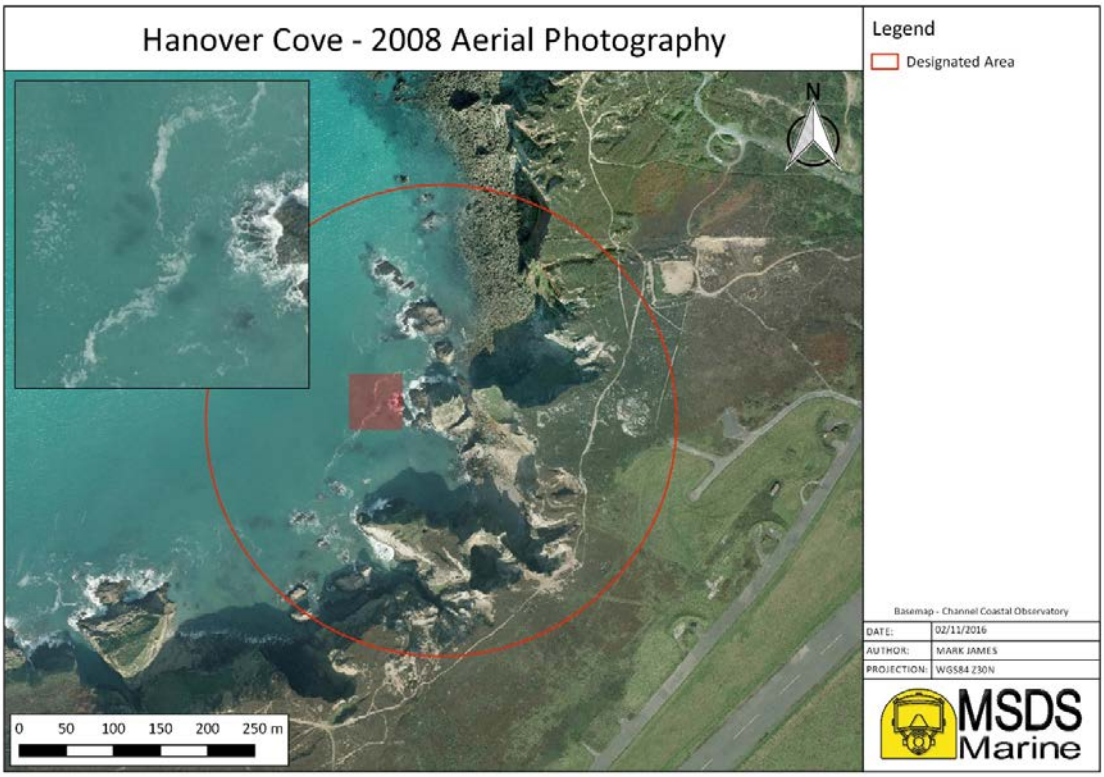


Fig. 9: Hanover Cove – aerial photograph from 2008

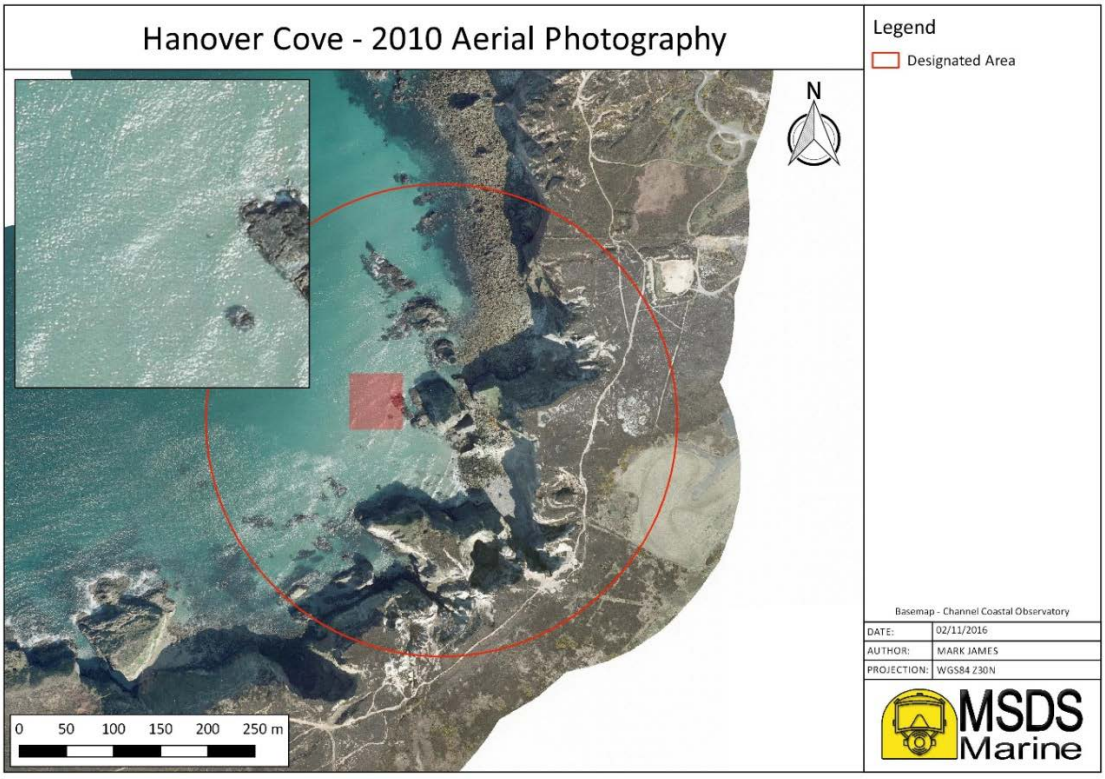


Fig. 10: Hanover Cove – aerial photograph from 2010

4.3.7 The sand levels appear to have reduced slightly between 2013 and 2016. A cluster of three rocks, one of which was visible and two that were faintly visible in 2013, are now more exposed. A further smaller rock to the south of the eastern rock that was covered in 2013 is now also visible.

5.0 Discussion of identified anomalies

5.0.1 Two anomalies were identified in the multibeam data as being of potential archaeological interest. However, as mentioned it is likely that these anomalies represent the uppermost surfaces of partially buried rocks.

5.0.2 The anomalies were assessed against the aforementioned aerial photographs from 2008, 2010 and 2013. The images support the hypothesis of an accumulation of sand from 2008 to 2010 and very little change between 2010 and 2013. Objects, that are probably rocks, can be seen in the 2008 aerial photograph in the vicinity of the multibeam anomalies but not in the 2010 or 2013 images. Although, as stated, it appears from the 2016 multibeam data that there has been a reduction in sand levels since 2013 so the uppermost surfaces of these rocks could have been re-exposed.

5.0.3 The clear concentration of magnetic anomalies is highly likely to represent what remains of the vessel wrecked in Hanover Cove and/or debris from the salvage works. The assessment of the multibeam data suggests that any anomalies in this area are buried which would account for the relatively low amplitudes. It is not possible to determine the depth at which these anomalies may be buried.

6.0 Recommendations for ground-truthing

6.0.1 As evidenced by the aerial photography it is possible to walk around the two anomalies, MB001 and MB002, identified in the multibeam data at a low spring tide although access would have to be by boat. It is likely that the anomalies are not anthropogenic in origin and represent theuppermost surfaces of partially buried rocks. Considering the bathymetric anomalies' relative proximity to the cluster of magnetic anomalies (*c.* 50m east of MAG0004) and their accessibility, it is considered prudent to ground truth them.

6.0.2 The magnetic anomalies, particularly the eight anomalies over 5nT (MAG0007–MAG0014), may demonstrate the presence of wreck material. However, the multibeam data suggests that these anomalies are buried and any further investigation would therefore require excavation to determine their nature, which is beyond the scope of this investigation.

6.0.3 Sub-bottom profiling was considered to further investigate the magnetic anomalies but has been discounted for a number of reasons. Primarily, it would be very difficult to distinguish between wreck material and geological features in any anomalies detected by the sub-bottom profiler. Sub-bottom

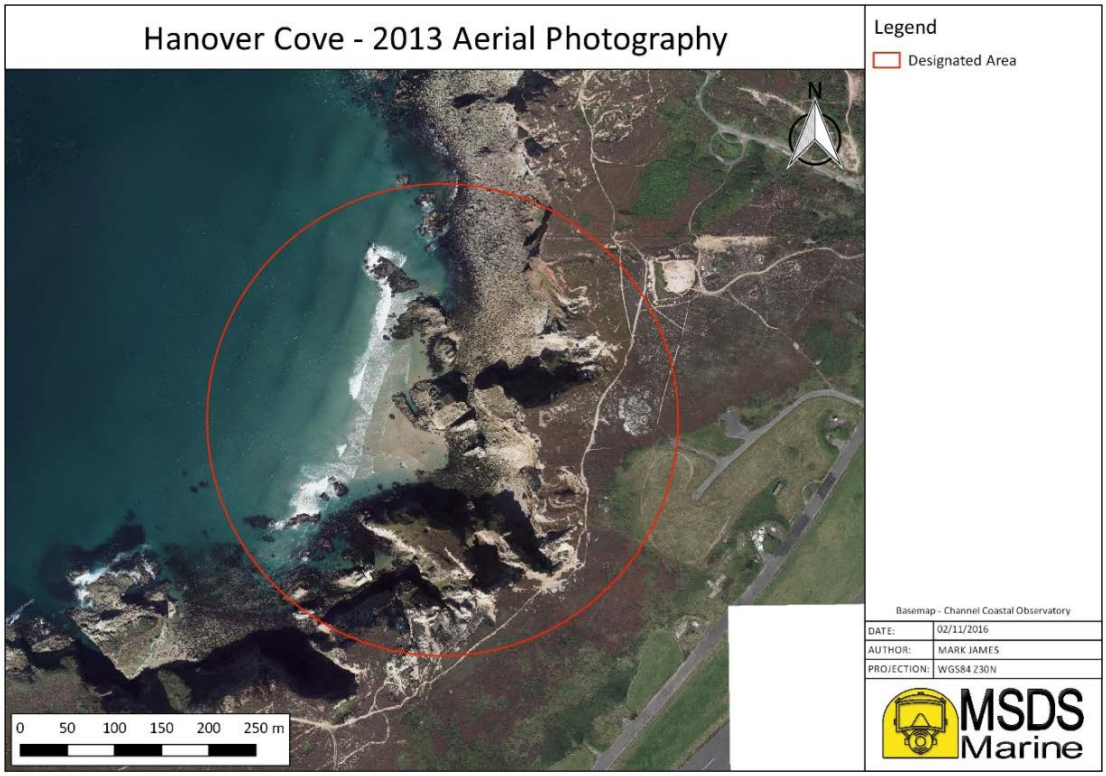


Fig. 11: Hanover Cove – aerial photograph from 2013

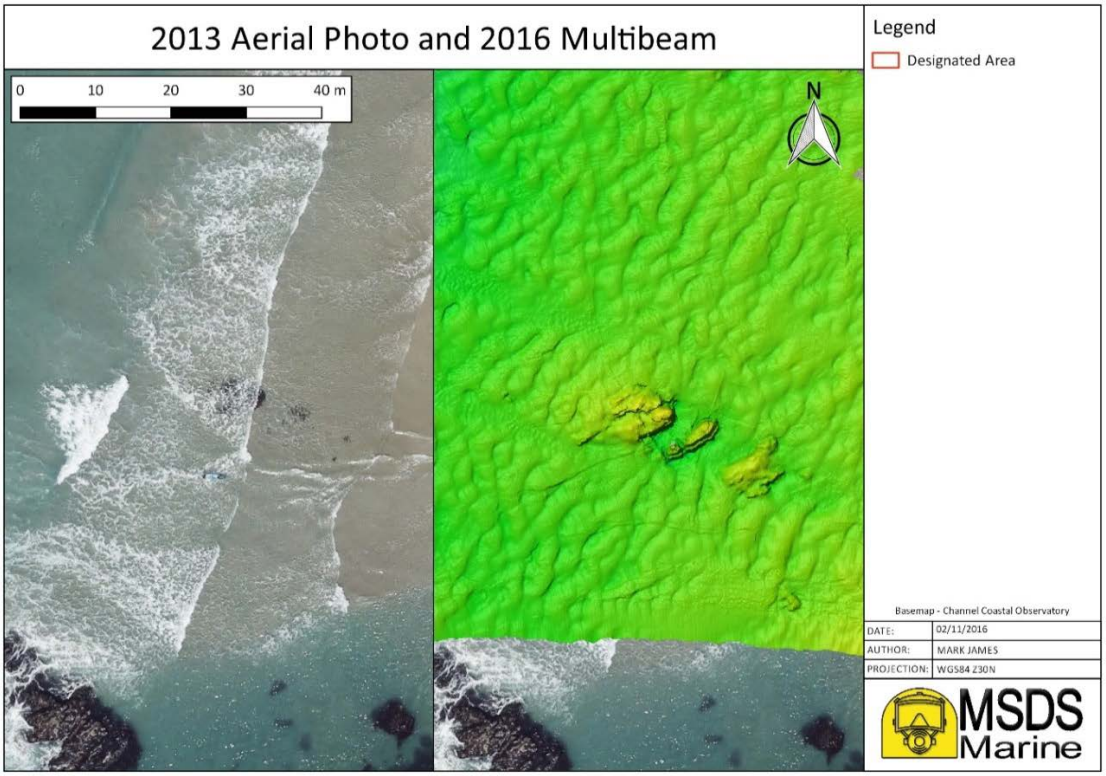


Fig. 12: Comparison between the 2013 aerial photograph and the 2016 multibeam data

profiling may be beneficial in identifying the stratigraphy across the site, and for determining the potential depth of any buried material. It would not, however, be able to provide sufficient detail of the remains to determine if they are archaeological or associated with more recent salvage activities.

6.0.4 The magnetic anomalies could be probed by divers, but as the depth of the buried deposits is unknown this was considered unreliable and unlikely to provide sufficient information to distinguish between archaeological and modern material.

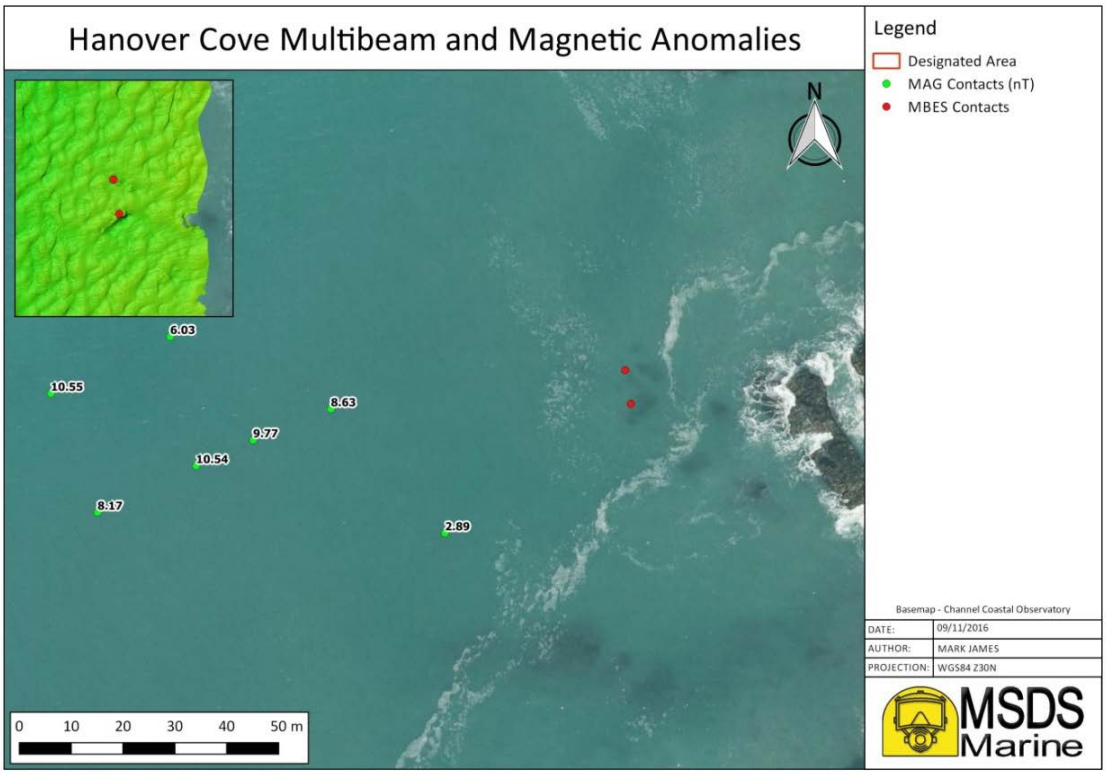


Fig. 13: Position of bathymetric anomalies in relation to magnetic anomalies

APPENDIX B: ASSESSMENT AGAINST DESIGNATION CRITERIA UNDERTAKEN BY THE ADU (2000)

The following assessment was written by the ADU in 2000:

Period

This vessel is characteristic of a category known as packet ships, which were used in this period, to provide a swift postal service for the UK to other countries. The term packet is a functionary name that could be applied to a number of different types of vessel. The *Hanover* was a 100ft two-masted brigantine, built in 1757, and would have had a square-rig on the foremast but a fore-and-aft rig on the mainmast. These ships were designed purely for trade, particularly on coastal and cross channel routes.

Rarity

This is an example of a site that contains the only known wreck of a class of vessel that was once relatively commonplace. Its significance provides an argument for continued designation under the Protection of Wrecks Act 1973.

Documentation

Although there is a large amount of contemporary documentation relating to maritime trade at this time, a considerable amount of direct historical evidence relating to the sinking and the subsequent salvage operations of the *Hanover* has also been unearthed.

Group Value

This site does not form part of a cohesive group of wrecks of similar type or date, either in the local area or nationally.

Survival/condition

The licensee and his colleagues appear convinced there is a lot more of the wreck on the site, however what does survive is likely to be in poor condition unless fortuitously trapped in small protective pockets in the seabed.

Fragility/vulnerability

The surviving section of ship structure was found under a number of the recovered iron guns. The concretions they developed underwater presumably helped to protect the wood and other organic material as, in this dynamic environment, articulated timbers would soon be broken up, dispersed and degraded. It seems likely that the guns were used as ballast during the voyage yet the structure that they protected was from the side not the bottom of the ship. This indicates a violent break up of the vessel with heavy guns fortuitously covering only part of the hull structure. This,

in turn, suggests that any structure not protected by iron corrosion products would have been very vulnerable and so unlikely to survive. The major source of corrosion products, the iron guns, have been removed from the site.

Diversity

The surviving archaeological record for packet ships is sparse but the historical and iconographic evidence suggest that there was a greater diversity of design and form in packet boats and ships at the time of this wreck compared to the following periods.

Potential

The licensee is convinced the site still has high potential even though a large volume of material has been removed from the site. It would be difficult to accurately assess the site's potential without intrusive archaeological investigation, but the ADU's view is that what archaeological evidence does survive on the site is likely to be fragmentary and less easy to interpret than the material so far recovered.

Summary & conclusions

Although the site does not score highly on some of the criteria for designation, it is possibly a sufficiently rare example of a wreck of a once commonplace vessel that legal protection should be continued, perhaps until such time that a better example is found in UK waters.

Unfortunately sea conditions did not allow the ADU to dive on the site at the time of the visit, but the Licensee and his team co-operated fully with the ADU and a dialogue was re-established. The Licensee showed much of the material recovered during their operations in 1997, although some was packaged ready for imminent removal to Bodmin Gaol which Orca plc was hoping to acquire for a shipwreck display centre. The recovered iron guns had been de-concreted but not conserved, however they seemed to be stored satisfactorily in tanks containing a holding solution.

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