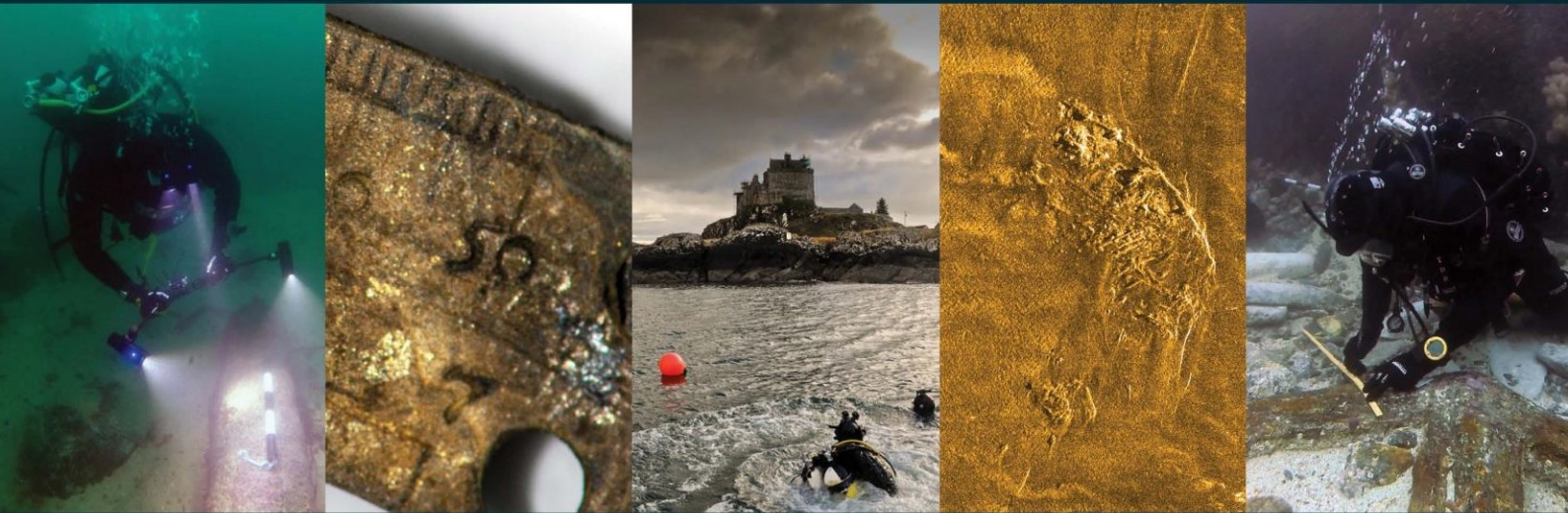


Langdon Bay Protected Wreck

Marine Assessment for Possible De-Designation



for

Historic England

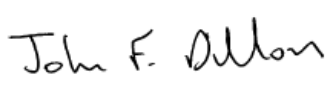
CA Project: 770340

CA Report: 16478

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Langdon Bay protected wreck
Marine assessment for possible de-designation
Historic England project number: 7375
CA project: 770340
CA report: 16478

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Figure 1	Site location
Figure 2	2016 diver survey coverage shown against 2002 multibeam bathymetry data

SUMMARY

Project Name: Langdon Bay protected wreck: Marine Assessment for Possible De-designation.

Cotswold Archaeology was commissioned in February 2016 by Historic England to undertake a marine assessment for possible de-designation of the Langdon Bay designated wreck site. A total of c. 360 bronze artefacts have been recovered from the site and the wreck is believed to be the remains of a middle Bronze Age boat carrying a cargo of scrap bronze from continental Europe to Britain. The number of bronzes recovered from the site fell significantly after 1983, and there is little evidence of archaeological investigation of the site after 2002. The wreck was designated due to the unique archaeological resource represented by the bronze artefacts recovered from the seabed and the potential threat posed to the site by salvors. This assessment and report are based on, and present the results of, desk-based research and diver survey.

1. INTRODUCTION

Outline

1.1. Cotswold Archaeology (CA) was appointed by Historic England (HE) to carry out an assessment of the Langdon Bay protected wreck (List Entry Number 1000059) with the aim of reassessing the designation status of the site. This assessment comprises desk-based research and the results of a diver survey.

1.2. The Langdon Bay designated area is one of three sites identified by Historic England as requiring additional investigation to inform discussions on possible de-designation (Historic England, 2015):

The three sites identified in this brief have not had contract or Licensee visits for many years. Historic England believes that there may be little, or indeed no, archaeological remains left on the sites, however, without site visits it is impossible to conclude this with any certainty. Specific archaeological assessment of the three sites will assist in their future management, whilst potential de-designation will enable Historic England to better prioritise resources.

1.3. The site lies on a wave-cut chalk platform in 6 to 10 metres of water, c. 500 metres south of the Dover cliffs. A thin layer of mobile sediment overlies the exposed bedrock and can accumulate in the shallow gullies across the site.

1.4. The site was originally designated under the Protection of Wrecks Act (1973) in 1978 following an emergency application by Keith Muckelroy (University of Cambridge) on behalf of Dover Sub Aqua Club (Gibbons, 1978). The emergency application was due to the easy access to Bronze Age artefacts by salvors:

...the artifacts [sic] are literally lying there waiting to be picked up, by friend or foe, or moved by the current. Knowledge of the finds is not yet public but he [Muckelroy] says that salvage companies are working in the locality and fears that the presence of BSAC divers may arouse the former's interest. (Gibbons, 1978)

1.5. In addition to the immediate threat to the site, Muckelroy put forward the following reasons for the site's designation (Muckelroy, 1978):

- i. *The fact that this collection as a whole would be more at home in a French context than an English one, suggesting it was accumulated in France.*

- ii. *The fact that the number of objects now known puts it out of the normal range of land hoards.*
- iii. *The small area of the sea-bed over which this material at present seems to spread makes it difficult to see how it could all have been eroded from a land site – any such process must surely have dispersed items over several kilometres.*

Co-ordinate systems and GIS

- 1.6. The current project ArcGIS workspace was set up in WGS1984, using the UTM Zone 31N projection. Existing site plans were georeferenced to modern charts in this projection.

Location

- 1.7. The Langdon Bay protected wreck site is designated as an area of 150m radius centred on the point 51 07.60 N 001 20.80 E (WGS84), lying below the high water mark of ordinary spring tides (Historic England, 2016). The designated area is located immediately east of Dover Harbour, overlapping the eastern harbour wall.
- 1.8. Site reports and multibeam bathymetry data acquired in 2002 indicate that there are shallow gullies in the northern half of the designated area. This was confirmed during the CA diving operations. Along the coast, immediately north of the designated area, the bedrock geology is comprised of the White Chalk subgroup which would have formed approximately 66 to 100 million years ago; with superficial deposits of the clay-with-flints formation – Diamicton (BGS, 2016).

Scope and aims

- 1.9. This assessment focuses upon the known and potential archaeological remains associated with a possible middle Bronze Age wreck within the Langdon Bay designated area. Approximately 360 bronze artefacts have been recovered from the site since 1974, however there has been a marked reduction in the number of finds recovered since 1983, and little evidence for any archaeological work on the site after 2002.
- 1.10. The stated aims of the project (Historic England, 2015) are:
 - to allow Historic England to update/enhance the quality of the National Heritage List for England (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.

2. METHODOLOGY

2.1. This assessment focuses on the Langdon Bay designated area (Fig. 1) but also, where informative, historic environment evidence and heritage assets in the wider environs. This study area has ensured that data sources provided sufficient contextual information about the wreck site.

Desk-based assessment

2.2. Research was first carried out to establish what remains might be expected to survive on the wreck site and where they might be located. There is currently no licensee for the Langdon Bay site. Access to the licensee archive was provided by HE, which included information relating to the original designation of the wreck site. Additional reports and publications regarding Langdon Bay were also consulted.

2.3. As the potential archaeological remains are principally thought to be relatively small bronze artefacts distributed mainly within gullies, geophysical survey (of any type) was considered to be inefficient and poorly suited to the prospection for potential surviving remains of the Langdon Bay wreck. Consequently, it was agreed, in consultation with HE, to undertake diver surveys using hand-held underwater metal detectors combined with visual inspections. Existing site plans and existing geophysical survey data were used in the formulation of survey strategies to ensure extensive and thorough coverage.

Diver survey

- 2.4. A diver survey of Langdon Bay was undertaken by CA from 1 August to 5 August 2016 with the aim of identifying any Bronze Age artefacts still present within the Langdon Bay designated area. The diving operations were run by CA's diving contractor MSDS Marine Ltd and the diving team comprised Mark James (dive supervisor), and divers Michael Walsh, Patrick Dresch, Daniel Pascoe and Kevin Stratford.
- 2.5. All diving operations complied with the Diving at Work Regulations 1997 and the associated Scientific and Archaeological Approved Code of Practice (ACOP). Diving operations were conducted during daylight hours only, on a single shift system by a four person team with one dive supervisor. The diving technique selected was free-swimming buddy-pair SCUBA with through-water communications.
- 2.6. A corporate licence was issued by HE under the Protection of Wrecks Act 1973 which allowed CA to access and work within the designated area between 18 April 2016 and 30 November 2016. No additional permits to work were required by the Dover Harbour Master.
- 2.7. The diving support vessel (DSV) was *Channel Diver*, an 11m MCA coded dive charter vessel. Shore base was approximately 20 minutes away through Dover Harbour, dependent on ferry traffic.
- 2.8. In order to structure the survey and facilitate diver navigation, seabed searches were centred on shot positions recorded at the beginning of each dive. In order to locate any remaining bronze artefacts and to investigate the potential for buried artefacts under mobile sediments and in gullies, the primary search technique involved divers using hand-held underwater metal detectors along with visual searches.
- 2.9. The underwater metal detector used was an AquaScan AQ1B fitted with a medium sized coil. This is capable of detecting objects up to a range of 3m and variable pulse speed for distinguishing between metal types (Aquascan International Limited, n.d.). At the start of each dive it was re-calibrated underwater to provide the optimal return signal.
- 2.10. As the brief was for non-invasive investigation, no excavation was carried out and buried anomalies located with the metal detector remain unidentified.

- 2.11. Owing to the low visibility which prevented underwater photography, the difficult diving conditions, and the high energy environment caused by swell, which was known to move finds thus making them difficult to relocate, it was decided to record a small selection of post-medieval and modern finds on the surface, and these will be returned to the site.
- 2.12. Previous work conducted on the site by the Archaeological Diving Unit (ADU) indicated that the currents were strong but dive-able for three hours during neap tides, and only dive-able for one hour whilst ebbing during spring tides (ADU, 2002).
- 2.13. A total of eight dives (using two divers for each) were carried out between 2 August and 5 August 2016 (Table 1). Each dive assessed a different sector of the designated area, with both circular search and transect search techniques being utilised (Figure 2). Desk-based research prior to diving operations suggested that the gullies in the northern part of the designated area had the highest potential to retain Bronze Age artefacts. Particular attention was therefore placed on investigating these and the centre of the designated area where the highest number of bronzes had been found previously.
- 2.14. The total bottom time achieved over the eight dives was 848 minutes. A total of c. 0.2ha of the 7ha designated area (c. 3%) was surveyed over the course of the eight dives (Table 1). This assumes the search of c. 1m either side of each transect line.

Dive	Date	Divers	Search method	Area (ha)	Bottom time per diver (minutes)
1	02/08/2016	Dresch/Pascoe	Visual	0.03	43
2	02/08/2016	Walsh/Stratford	Visual	0.03	40
3	03/08/2016	Dresch/Pascoe	Visual and metal detector	0.02	60
4	03/08/2016	Walsh/Stratford	Visual	0.03	53
5	04/08/2016	Dresch/Pascoe	Visual and metal detector	0.04	55
6	04/08/2016	Walsh/Stratford	Visual and metal detector	0.02	61
7	05/08/2016	Dresch/Pascoe	Visual and metal detector	0.03	58
8	05/08/2016	Walsh/Stratford	Visual and metal detector	0.01	54
Total				0.20	424
Total bottom time (minutes)					848

Table 1 Survey coverage of Langdon Bay designated area.

3. THE DESIGNATED SITE

- 3.1. A total of c. 360 bronze artefacts have been recovered from the site since it was identified in 1974. There is no direct evidence regarding the build of the possible middle Bronze Age vessel wrecked in Langdon Bay. All information regarding the site derives from the recovery of bronze artefacts which may represent the cargo of a wrecked vessel, a jettisoned cargo, or may have been deposited by some other process such as the intentional deposition of a hoard, or votive offering. If the site is the result of a middle Bronze Age wrecking event, then the closest equivalence may be the remains of the Dover Boat discovered c. 2.5 miles away during work on the A20 in Dover (Clark, 2004).
- 3.2. The Dover Boat was constructed from planks and fastened together using a system of wedges and stitches fashioned from yew withies (Clark, 2004). The boat was flat bottomed and the surviving structure measures c. 2.3m wide by c. 9.2m long, although one estimate suggests it may originally have been as long as 15m (Clark, 2004).
- 3.3. One interpretation of the site, originally put forward by Keith Muckelroy, is that the recovered bronze assemblage represents a cargo of scrap metal being transported from continental Europe to Britain to be melted down and reused (Muckelroy, 1978) It has been suggested that the boat carrying the cargo was caught in a storm and either jettisoned it to lighten and save the boat or sank with it. Either way, this demonstrates that cross-channel trade was already occurring in the Bronze Age, if not earlier.
- 3.4. The site is located just outside Dover Harbour, an area which, as a result of its close proximity to the Continent, has historically been active in maritime trade and a key focus of Britain's links to Europe. This is reflected by the heritage assets in the wider environs of Langdon Bay including Dover Castle and the World War II defences and installations overlooking the bay. Underwater this is also evidenced by post-medieval and modern debris reported throughout the archaeological investigations of the site, and also noted as hampering the effectiveness of metal detectors. Evidence of Dover's military role in World War II is also seen in the unexploded ordnance (UXOs) which have been identified within the designated area (Needham, et al., 2013).

3.5. Since 1978 to the present day there has been observable movement of artefacts on the seabed, demonstrated by the fact that previously searched or barren areas have yielded new artefacts, whilst a bronze artefact was found weighing down crisp packets in a hollow.

4. PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Pre-designation

1974

4.1. In August 1974, Simon Stevens and Mike Hadlow of the Dover sub-aqua club (DSAC) were diving in the eastern side of Langdon Bay when they came across a small group of objects (Needham, et al., 2013). Five of these objects including a spearhead were recovered and shown to Mrs Coveney, the curator of the Dover Museum. The nature of the objects was recognised and Brian Philp, the director of the Kent Archaeological Rescue Unit was contacted. A meeting between Mr Philp and Alan Moat, the DSAC's diving officer, included an explanation of the importance of the finds and the request that dive logs be kept and records made of any finds.

4.2. A baseline was then placed across the site to record the positions of finds and a total of 86 finds were recovered (Needham, et al., 2013). Most of the finds were recovered from the base of a gully, and all were found on the surface or partially buried in sand overlying the chalk to a thickness of 24-50mm (Needham, et al., 2013).

1975

4.3. Following bad weather, the original marker buoys had been swept away so the location of the site had to be re-established (Needham, et al., 2013). A grid search pattern was then established and four more bronze objects were recovered. The use of a metal detector at the end of the season led to the location of six more artefacts (Table 2), bringing the total to ten for that year (Needham, et al., 2013).

1977 – 1978

4.4. In April 1977 the Council for Nautical Archaeology (CNA), which later became the Nautical Archaeology Society (NAS), was contacted by the British Museum enquiring as to a possible archaeological investigation of Langdon Bay (Needham, et al., 2013). It was not clear at this point if there were any artefacts remaining on the seabed or if they had all been lifted and there is no evidence that further action was taken directly by the CNA.

- 4.5. The consultation with the CNA may, however, have raised the profile of the site to bring it to the attention of Keith Muckelroy (University of Cambridge). In February 1978, Muckelroy contacted the secretary of the DSAC which led to Muckelroy being invited to dive the site with the club. During his visit it became apparent that the club had continued to dive the site and had recovered approximately 30 finds (Table 2), only three of which had been reported to the Receiver of Wreck (Needham, et al., 2013). Muckelroy realised that there were still a significant number of bronze artefacts and, although unclear at the time what the site represented, the limited options for protection led him to recommend it for immediate designation under the Protection of Wrecks Act (1973) (Muckelroy, 1978). Due to the potential threat of local salvors, the site was designated in May 1978 (Gibbons, 1978) under an emergency designation. A joint licence was granted to Alan Moat of the DSAC and Keith Muckelroy on the understanding that he would remain the archaeological advisor for any further work. The original designation under the Protection of Wrecks Act (1973) was for a circular area with a 75m radius centred on 51° 7' 36" North 1° 20' 48" East (Gibbons, 1978).

Post-designation

1978 -1980

- 4.6. Following the designation of the site, Keith Muckelroy worked with the DSAC to establish a more robust archaeological methodology for the investigation of Langdon Bay. This included establishing a new grid over the site and focusing on mapping the locations of artefacts rather than recovering them. The 1978 season ended with the locations of an additional 40 to 50 bronzes (Table 2) mapped but left on the seabed (Needham, et al., 2013). This mapping work established that there was a central concentration of artefacts within an area measuring c. 40m by 20m, with some widely dispersed bronzes beyond this.
- 4.7. In December 1978 it was recommended that the size of the designated area be increased to a circle of 150m radius (Moat & Muckelroy, 1978), which was put into effect by the Department of Trade in 1979 (Needham, et al., 2013). The research objectives changed in 1979 with the aim of recovering every bronze on the seabed so that they could be studied in more detail. A secondary aim was to establish a better understanding of how the site had developed and determine if the artefacts were *in situ* or if they had been redeposited (Needham, et al., 2013).

- 4.8. At the beginning of the 1979 dive season, the site was gridded out with 2m corridors either side of the east-west baseline (Needham, et al., 2013). These corridors were excavated using a water dredge to remove the overlying silt, and the cleaned areas photographed. Despite bad weather during 1979, by the end of the season a total of 750 square metres had been searched and a further 57 bronzes recovered (Table 2) over the course of 192 dives (Needham, et al., 2013).
- 4.9. In 1980 Muckelroy adapted the site investigation methodology to utilise two dive teams simultaneously working in the eastern and western parts of the site (Needham, et al., 2013). Changes in recording methodology also included hammering blue tags into the seabed to mark the locations of bronzes, and the use of a metal detector. It was found that many of the bronzes were not immediately obvious due to a 'light covering' of calcareous silt, with others hidden down fissures in the chalk and mollusc holes (Needham, et al., 2013). The dive season finished in October 1980, following Muckelroy's sad death in September whilst working at the Oakbank Crannog in Loch Tay.

1981 – 1989

- 4.10. Following the death of Keith Muckelroy, Martin Dean took over as the archaeological advisor for the project. This change allowed the project to be reassessed and it was noted that as the experience of the team increased, the types of bronzes also changed (Needham, et al., 2013). This was marked by a shift in the type of artefacts recovered from large bronzes lying on the surface to smaller ones retrieved from cracks and fissures (Needham, et al., 2013). Martin Dean pushed for the limits of the site to be better determined, and to retrieve as wide a range of bronze types as possible to increase the value of the assemblage as a research tool (Needham, et al., 2013).
- 4.11. From 1981, the funding provided by the British Museum was gradually reduced as fewer finds were recovered, as reflected in the accessions by the museum, and by 1985 it was decided by the National Maritime Museum that further large-scale field work was unnecessary (Needham, et al., 2013) although DSAC continued to work on the site. In 1986 Martin Dean took on a new role as the director of the ADU at the University of St Andrews, which resulted in a reduction in his direct involvement with the project. By 1987 the DSAC were considered competent to carry out searches of

the site with minimal supervision. At this stage most of the bronzes had been recovered and no additional artefacts (Table 2) were recovered by the DSAC during this season or the next (Needham, et al., 2013).

- 4.12. In 1989 the DSAC reported that the site had been scoured, possibly related to the hurricane which had struck the south coast of England in October 1989 (Needham, et al., 2013). Despite this the DSAC managed to relocate some of the sinkers and ground lines which marked the survey grid and recovered an additional five bronzes (Needham, et al., 2013).
- 4.13. During a meeting of the Advisory Committee on Historic Wreck Sites (ACHWS) in December 1989, Dean reported his growing unease with the potential conflict between his dual roles as licensee and ADU principal field investigator. This led to his decision to step down as co-licensee and the subsequent withdrawal of the DSAC excavation licence (Needham, et al., 2013).

1990 - 1998

- 4.14. Owing to Dean's withdrawal as archaeological advisor, the licence issued to Alan Moat and the DSAC was restricted to maintenance only (Needham, et al., 2013). This type of licence only provided access to archaeological advice, and continued to be issued to the DSAC until Alan Moat's death in 1998.
- 4.15. Under the terms of their contract to provide the Government with advice in relation to the Protection of Wrecks Act (1973) the ADU continued to visit and monitor the Langdon Bay designated area and to work with the licensee. In 1990 the ADU assisted with the re-establishment of the site's grid and noted that material was still being found in previously searched areas (ADU, 1990). They also noted in their report that a fragment of bronze was mapped but not recovered, and could not be found again on subsequent dives possibly after being moved by wave action. Following this the licensee raised other material (Table 2) against the recommendations of the archaeological adviser, Martin Dean (ADU, 1990).
- 4.16. The ADU visited the site in 1996 and reported that no archaeological material was observed. The ADU fixed a new 50m baseline running north-south, starting 25m south of the centre of the designated circle and ending 25m north, to facilitate further surveys (ADU, 1996).

4.17. The concerted archaeological investigation of Langdon Bay by DSAC appears to have come to an end following Moat's death in 1998 (Needham, et al., 2013).

1999

4.18. The site was visited by the ADU in 1999. The ADU fixed five datum points to the seabed, with industrial-strength adhesive. These were also labelled with floats and then connected N-S and E-W by ground lines. The datum points were installed in order to facilitate future surveys of the site. The ADU did not observe any archaeological remains on the site during this period, although they did note that the fine chalk sediment which had settled on the site from the digging of the channel tunnel had dispersed (ADU, 1999).

2002

4.19. Under the National Heritage Act (2002), English Heritage (EH) took on the administrative responsibility for designated wrecks. The overall management of the Langdon Bay site therefore fell under EH's (now HE) purview as a result, including the granting of licences and the establishment of external archaeological assessment.

4.20. The ADU reported on the site and undertook high resolution multibeam bathymetry surveys during this year (ADU, 2002). The results of these surveys were used to improve the position fixes of previous survey work and to improve the understanding of the contexts from which the finds had been recovered.

After 2002

4.21. Table 2 shows the reduction in the number of finds recovered from the initial identification of the site until 1992 (Needham, *et al.*, 2013). The total number of finds recovered shown in this table comes to 357, three short of the final total of 360 which may be explained by the estimated number of finds from before the site's designation which were later reported and acquired by the British Museum. There is also some apparent discrepancy between the dates of finds recovered and the accession dates recorded by the British Museum. Examples of this are the 1984 accession numbers, when no finds were recovered that year. This is likely a result of finds being recovered but not being accessioned in the same year. The final number of finds held by the British Museum comes to 393 (Needham, *et al.*, 2013) although the total is reported elsewhere as 360 (Needham, *et al.*, 2013; Parham, 2005). This total

includes 21 finds which received accession numbers in 2005, although it is unclear from where these finds came; they may have been from a private collection which had not previously been reported.

4.22. Ted Westhead is recorded as the licensee for the site from 2009 to 2012 but it is unclear from the archive material provided by HE what work was undertaken at this time. Indeed there is little, if any, evidence for further investigations on the site in the intervening 14 years since 2002, hence the reason for this reassessment of the site.

Year	Licensee	Number of finds recovered
1974	NA	86
1975	NA	10
1976 - 1978	NA	30?
1978	Muckelroy and Moat	<i>(40 – 50 identified but left on seabed)</i>
1979	Muckelroy and Moat	57
1980	Muckelroy and Moat	43
1981	Dean and Moat	40
1982	Dean and Moat	59
1983	Dean and Moat	23
1984	Dean and Moat	0
1985	Dean and Moat	0
1986	Dean and Moat	?
1987	Dean and Moat	0
1988	Dean and Moat	?
1989	Dean and Moat	5
1990	Moat	4
1991	Moat	?
1992	Moat	0
Total		357

Table 2 Number of finds recovered by year (from Needham *et al.* 2013)

5. RESULTS OF 2016 FIELDWORK

- 5.1. Despite poor visibility and adverse weather conditions compounded by increased swell with the change of tide, a thorough visual and metal detector survey was achieved over eight areas (Figure 2). As described above, the diver survey focused on the centre of the designated area and the gullies to the north of the location of the 2002 survey grid. A single 50m, north-south transect was also searched, which began c. 10m south of the 2002 survey grid, to assess the potential of surface finds in the sandier, flatter area in the southern part of the designated area.
- 5.2. Attempts were made to visually inspect all anomalies identified using the metal detector, however some of these were buried beneath the seabed and could not be identified. The positions of large objects, including the remains of the previous survey grid, a possible chain link and a UXO (also avoided due to the safety risk) were recorded and left in place (Figure 2). Modern debris and smaller artefacts which would not easily be relocated were recovered to be photographed on the surface for proof of methodological effectiveness (Appendix A). Due to their relatively recent date the artefacts recovered are not relevant to understanding the Bronze Age aspects of the designated area, and they will be returned to the designated area. No Bronze Age artefacts were observed during diving operations.
- 5.3. The seabed was comprised of a thin silt deposit overlying chalk bedrock. The topography of the search area varied from flat seabed with individual upstanding rocks and boulders (up to 0.8m high), to gullies varying in depth (up to 0.4m) and width (up to 1m) but petering out to flat seabed. Gullies observed further north during Dives 3, 4 and 7 had abrupt edges and were better defined than those seen further south during Dive 5 (Figure 2). As the swell increased, strong surges were observed in the gullies capable of moving small boulders and divers.
- 5.4. Owing to the limited amount of sediment overlying the bedrock, which appeared to be highly mobile, it is highly unlikely that there was any significant archaeological material buried in the areas investigated. Where partially buried objects were identified, they were ferrous and likely to have been intentionally placed possibly as part of previous survey efforts. It is also possible that the unidentified metal detector anomalies may be associated with the 1980 archaeological methodology of hammering tags into the seabed to mark the locations of finds.

- 5.5. Although it is possible that Bronze Age artefacts may be present in parts of the designated area that were not investigated, the potential for these is considered low.

6. ASSESSMENT OF SIGNIFICANCE

Background to designation

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

Period

- 6.2. The date of the bronzes recovered from Langdon Bay suggests that their deposition would have occurred in the middle Bronze Age around the 13th century BC (Parham, 2005). Any surviving structural remains of a vessel from this period should be considered highly significant.

Rarity

- 6.3. Surviving remains of seagoing vessels from the Bronze Age are extremely rare, and those such as the Dover Boat are not complete and are open to multiple interpretations of their design (Clark, 2004). Due to the rarity of vessels from this period, any structural remains of a Bronze Age seagoing vessel should be considered highly significant.

Documentation

- 6.4. As is to be expected of prehistoric finds, there are no documented historical events or people associated with the wrecking of a Bronze Age vessel in Langdon Bay.

Group Value

- 6.5. The remains of a middle Bronze Age sewn-plank boat were discovered during the excavations associated with work being carried out on the A20 in Dover, c. 2.5 miles north-west of the Langdon Bay designated area (Clark, 2004). The location of the Dover Boat within the wider environs of Langdon Bay and dating from a similar period, means that the two sites could be understood in relation to each other and should therefore be grouped. The discovery of the Dover Boat is considered highly significant and the associated group significance should also be considered high.

Survival/condition

6.6. No structural remains associated with a middle Bronze Age vessel have been identified in Langdon Bay. The identification of the wreck site is based on the mapping and recovery of bronze artefacts thought to be the vessel's cargo. A total of c. 360 finds have been recovered from the site, with a considerable reduction in the number of finds being recovered after 1983 (Table 2). Investigations carried out after 1996, including the 2016 diver survey, have been unable to locate additional bronzes. It is therefore thought that very little to no Bronze Age material survives within the Langdon Bay designated area.

Fragility/vulnerability

6.7. Very little if any Bronze Age material is thought to remain in the Langdon Bay designated area, although the old adage 'absence of evidence is not evidence of absence' must apply. However, if any artefacts do remain they are likely to be small and, if located on the surface of the seabed will be subject to movement by currents and wave action. Previous investigations of the site, as well as the 2016 diver survey, have identified the potential for UXOs within the designated area. This was confirmed through discussions with the Dover Harbour Master who reported that, as a front line of Britain's defence in both World Wars, the area was littered with UXOs. Controlled detonation of UXOs *in situ* could potentially damage or destroy any unidentified or buried archaeological remains, although it is highly unlikely that such material is present.

Diversity

6.8. Any Bronze Age artefacts remaining on the site are likely to be smaller than those previously recovered. If any were to be found, they would increase the diversity of the overall assemblage and may provide insight into other aspects of middle Bronze Age life.

Potential

6.9. Due to the programme of archaeological investigations of the site which began in 1978, many, if not all, of the Bronze Age artefacts which survived in Langdon Bay appear to have been recovered. Work carried out by the Dover Sub Aqua Club (DSAC) under the supervision of Martin Dean identified the potential for very small objects to work their way into crevices in the bedrock and mollusc holes (Dean,

1981). If such objects are still present they would be very difficult to identify and recover. Overall, it is thought that the potential for identifying ship's structure is negligible and the potential for identifying additional bronze artefacts is very low.

7. CONCLUSION

- 7.1. It is possible, as evidenced by the quotation below, that the archaeological interpretation of the Langdon Bay site has, to some extent, been influenced by legislation. Even early on in the site investigations, various other scenarios were suggested which might explain how the assemblage of bronzes came to be located in Langdon Bay. Due to the limited options available to protect the site, however, the wreck interpretation was given particular focus as noted by Keith Muckelroy:

As I have indicated in my application, the interpretation of this site as that of a wreck is far from being 100%, but I obviously had to concentrate, for these purposes, on that evidence which suggested that it may be so, the Act not allowing for the scheduling of occupation sites. (Muckelroy, 1978)

- 7.2. Despite this, the concentration of finds and estimates of cliff regression since the middle Bronze Age (Needham, et al., 2013) make it unlikely that the finds have been redeposited in Langdon Bay from a terrestrial site which has eroded out of the cliff. Another possible explanation is that the area of Langdon Bay was a terrestrial environment, and the hoard should be understood in that context. Once again, however, estimates of changes in coastal morphology suggest that this is unlikely, although the lack of evidentiary deposits overlying the chalk means that this cannot be entirely ruled out (Needham, et al., 2013; Sturt & Van-de-Noort, 2010). Whether Langdon Bay was submerged or not, it is likely that it would have been part of a very different environment to what we see today, possibly even a more sheltered marsh environment. Nearby environmental evidence from the Dover Boat excavation included a thick sequence of tufa, peats and silts similar to fresh water, shallow, braided fluvial systems (Needham, et al., 2013).
- 7.3. The standing theory that the recovered bronzes represent the cargo of a wrecked vessel, or a jettisoned cargo, would therefore appear still to be viable. A large proportion of the artefacts recovered originate from continental Europe, ranging from Brittany to the Lower Rhine region (Parham, 2005). They must therefore have been transported across the sea by some means, and the discovery of the nearby Dover

Boat suggests that vessels large enough to carry these bronzes in a single trip were active in this area during the middle Bronze Age. Analysis of the artefacts also indicates that many of them were bent or broken before their deposition, leading to the suggestion that it was a cargo of scrap metal being transported to Britain where it could have been melted down and reworked (Parham, 2005). One argument against the shipwreck hypothesis is that no other structural or artefactual remains have been found besides the bronzes (Samson, 2006), although the lack of survival does not mean that they did not at some point exist. Indeed the survival of a wooden vessel in this dynamic environment over c. three millennia would be remarkable.

- 7.4. An alternative hypothesis from the shipwreck scenario is that the bronzes were intentionally deposited in the marine environment (Samson, 2006). There is existing evidence of tools, weapons and ornaments being deposited in wet places including bogs and streams starting in the early Bronze Age (Samson, 2006). If the objects recovered from Langdon Bay represent a marine hoard, then the location may have held particular importance to the local inhabitants or traders during that period. In such a scenario it is unclear if all the bronzes would have been deposited at once, or if they represent individual offerings at a single site over many years. As noted by Parham (2005), however, whatever the interpretation it does not reduce the archaeological importance of the site.
- 7.5. It is beyond the scope of this report to review evidence of Bronze Age belief systems and their possible reflection in the Langdon Bay assemblage. Suffice to say that this assemblage offers a valuable research tool in aiding our understanding of, among other things, technology and trade during the middle Bronze Age. A result of making this assemblage available for further study is that the artefacts have been removed from the seabed, reducing the archaeological value of the site itself.
- 7.6. Site investigations have included mapping the locations of finds and geophysical survey to better understand their context on the seabed. Desk-based research and diver survey carried out in support of this assessment suggest that additional bronzes are unlikely to be found in the designated area and further information on their context is unlikely to be forthcoming. Indeed, if further bronze artefacts do survive they are likely to be uncontextualised as they would appear to have been moved

considerably from their place of original deposition. Preventing general access to the area is therefore unlikely to improve our understanding of it.

- 7.7. If the remains of a Bronze Age vessel were to be found with its associated cargo, it would be highly significant, but this scenario is almost unthinkable at Langdon Bay. Since structural remains have not yet been found, and the exposed bedrock suggests that little if anything remains buried, it is almost certain that, even if a vessel did sink at the site, the area is too exposed and too dynamic for any organic remains of that date to survive. The continued potential for Bronze Age remains to be recovered from the site is therefore very low, if not negligible, and leads us to recommend that Langdon Bay no-longer be designated under the Protection of Wrecks Act (1973).

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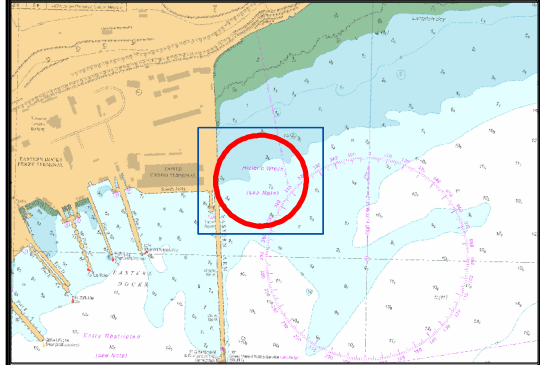
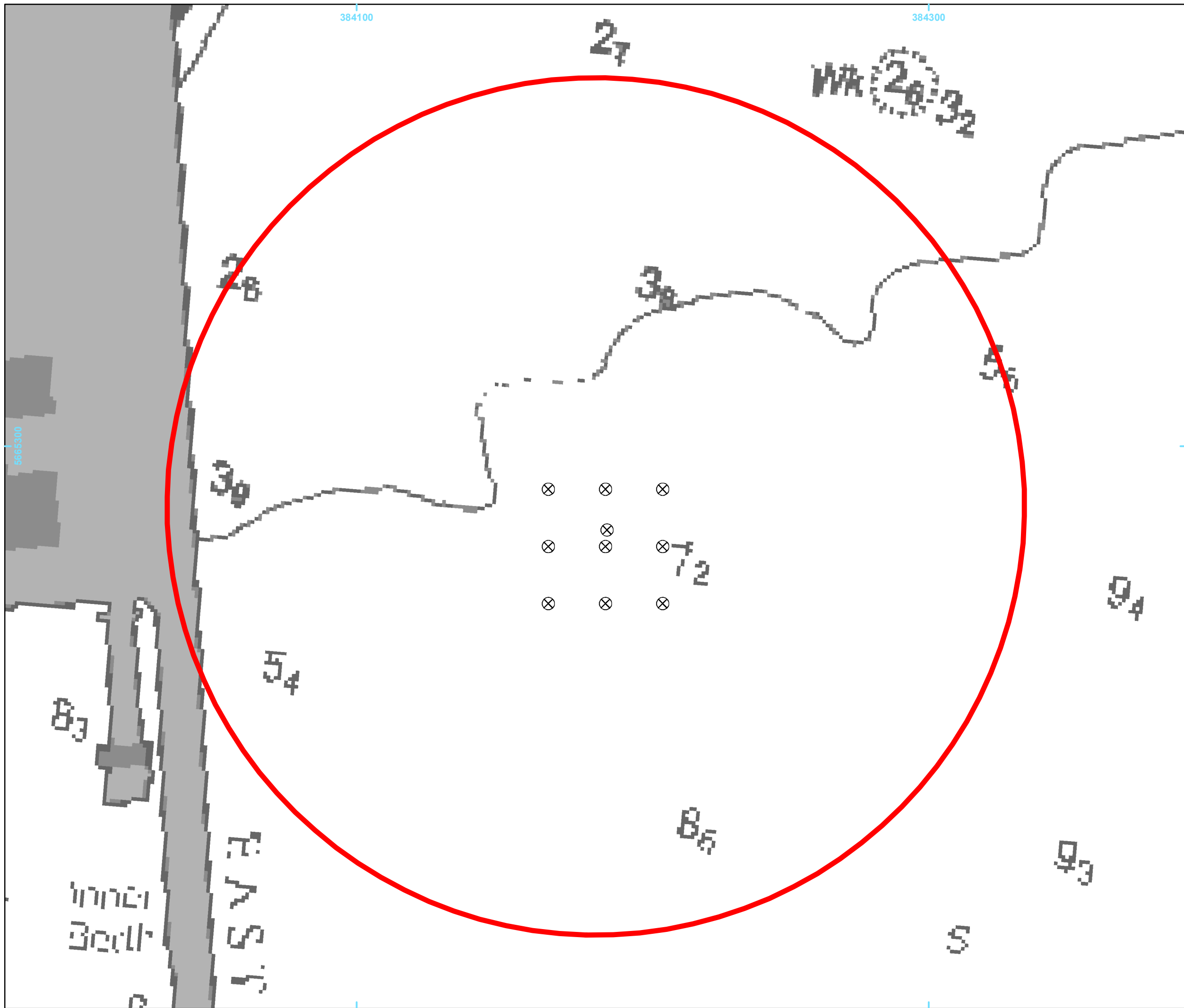
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APPENDIX A: Recovered finds.

CA Number	Material	Date	Description	Length (mm)	Width (mm)	Diameter (mm)	Easting	Northing
1	Ceramic	Post-medieval	Striped piece of pottery rim. Blue rim, white horizontal stripes on red body. Possibly 19 th Century Mocha ware.	36	33	3	384198	5665264
2	Brass	Modern	Brass clip formed of two connected parts with swivel joint.	58	25	7	384166	5665267
3	Rope	Modern	A piece of rope/cable.	336	22	NA	384204	5665342
4	Glass	Modern	Piece of green glass. Possibly the shoulder of a bottle	56	43	8	384209	5665351
5	Metal	Post-medieval/ Modern	Small piece of metal with round hole clipping edge.	20	19	4	384193	5665302
6	Metal	Post-medieval/ Modern	Small angular piece of metal. Possibly slag.	9	7	7	384198	5665293
7	Lead	Post-medieval	Musket ball.	19	18	12	384220	5665281
8	Slag	Post-medieval/ Modern	Rounded lump of metal, possibly slag.	40	39	25	384215	5665283
9	Lead	Post-medieval	Musket ball. Dark and light lead with casting line around edge. Slightly deformed.	12	12	12	384283	5665328
10	Lead	Post-medieval	Musket ball. Little to no deformation.	13	12	12	384284	5665326
11	Lead	Post-medieval	Musket ball. Little to slight deformation.	12	11	11	384284	5665324
12	Lead	Post-medieval	Musket ball. Deformed and elongated.	13	11	9	384284	5665322
13	Lead	Modern	Piece of lead with five parallel ridges. Outer ridges may be rifling. Fine lines running in opposite direction visible on reverse side.	33	32	2	384286	5665319
14	Unknown	Post-medieval/ Modern	Shiny stone, possibly slag.	52	38	22	384186	5665228



- Legend**
- Langdon Bay Designated Area
 - Map extent
 - ⊗ 2022 Survey grid



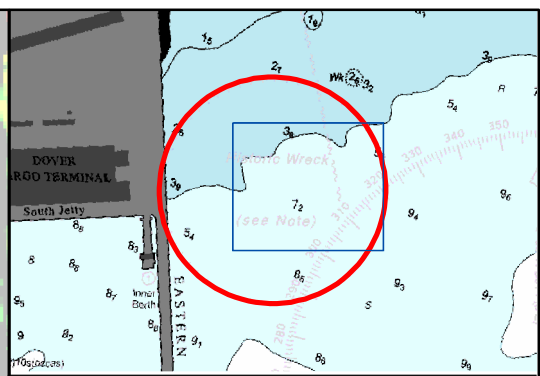
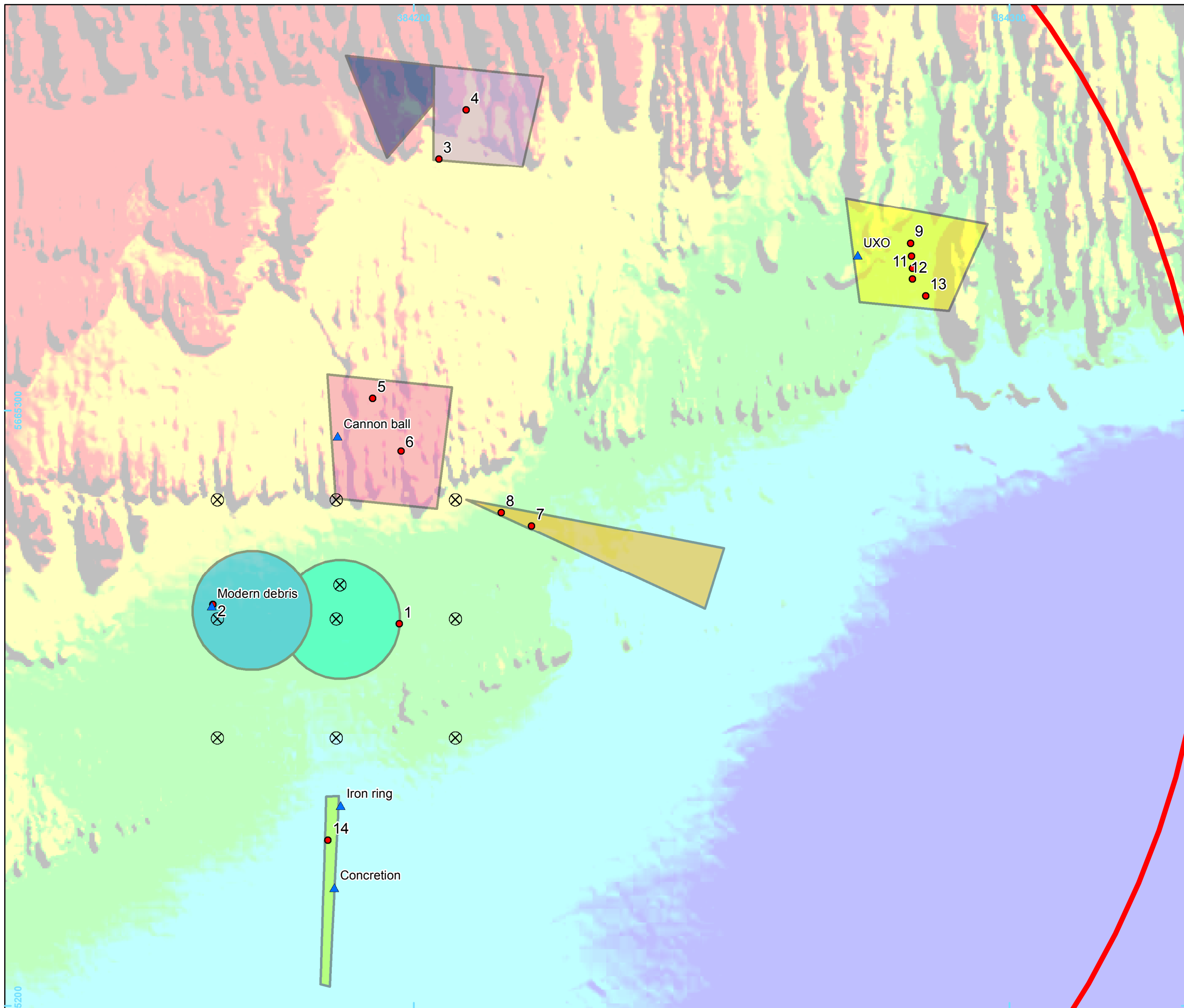
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PROJECT TITLE
**Langdon Bay Protected Wreck:
 Marine Assessment for Possible De-Designation**

FIGURE TITLE
Site location.

DRAWN BY PZD	PROJECT NO 770340	FIGURE NO.
CHECKED BY xx	DATE 23/08/2016	1
APPROVED BY MW	SCALE@A3 1:1,249	



Legend

- Langdon Bay Designated Area
- Map extent
- X 2002 Survey grid
- ▲ Unrecovered Finds, August 2016
- Recovered Finds, August 2016

Dive Survey Areas, August 2016

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8



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PROJECT TITLE
Langdon Bay Protected Wreck: Marine Assessment for Possible De-Designation

FIGURE TITLE
2016 diver survey coverage shown against 2002 multibeam bathymetry data.

DRAWN BY PZD	PROJECT NO 770340	FIGURE NO.
CHECKED BY xx	DATE 23/08/2016	2
APPROVED BY MW	SCALE@A3 1:600	

5665300

5665200

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