Hampshire & Wight Trust for MARITIME Archaeology

ENGLISH HERITAGE

Solent Marine Heritage Assets: Defining, investigating, monitoring and reporting 2008-2011

Needles Protected Wreck Site Report

January 2010

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i. ACKNOWLEDGEMENTS

The Solent Marine Heritage Assets project was commissioned by English Heritage (EH) following a proposal from the Hampshire and Wight Trust for Maritime Archaeology (HWTMA). The project has been designed as a heritage partnership which promotes a mutually beneficial working relationship between EH and the HWTMA. The work undertaken, particularly the diving fieldwork is arranged in conjunction with other HWTMA research work, to allow most effective use of resources. The project also uses data and information gathered by the HWTMA over the past 18 years. The project results help fulfil the agendas of both EH and HWTMA.

The HWTMA would also like to acknowledge a range of funders who, through their support of work on the sites included within the Solent Marine Heritage Assets project and other complementary research have helped make this project possible. These include: Hampshire County Council, the Isle of Wight Council, Southampton City Council, English Heritage, Defra's Aggregates Levy Sustainability Fund, the Crown Estate, the Heritage Lottery Fund, the Gosling Foundation, Herapath Shenton Trust, Daisie Rich Charitable Trust, Aiken Foundation, D'Oyley Carte Trust, Roger Brookes Charitable Trust, John Coates Charitiable Trust and the Charlotte-Bonham Carter Charitable Trust. Additionally we would like to acknowledge the help and support of the wide range of organisations and individuals without whose help the HWTMA would not be able to achieve the results it has obtained.

The assistance provided by Mark Dunkley (now Heritage Protection Team) and Alison Hamer of the English Heritage Maritime Team is gratefully acknowledged.

The HWTMA would also like to thank Trevor Jenkins and Lawrence Moran for their invaluable assistance during this survey.

ii. COPYRIGHT STATEMENT

iii. SUMMARY

The Solent has long been recognised for the importance of its marine heritage. The diversity and density of sites makes it one of the highest potential marine areas of England. As a result, the Solent Marine Heritage Assets project has provided funding to enable the Hampshire & Wight Trust for Maritime Archaeology (HWTMA) to work together with English Heritage (EH) to target work on marine heritage assets to enable more effective regional management and also provide a possible model for cost-effective support for developing national structures.

This report particularly focuses on the site monitoring which was undertaken on the Needles protected wreck on 3rd July 2009, in accordance with a Brief drafted by EH and agreed by the HWTMA. The site is located at a 200m radius from the point 50° 39.70' North 01° 35.43' WGS84, excluding any part of the area which lies above the high-water mark of ordinary spring tides. The site contains the remains of numerous wrecks, with two being so far identified as of particular historic significance; HMS *Assurance*, a 44 gun, fifth rate warship lost in 1753, and HMS *Pomone*, a 38 gun, fifth rate warship lost in 1811.

The survey methods used during the assessment of the Needles site were diver survey encompassing site photography and video. Taped measurements of observed archaeological features were not possible; instead their location was noted in reference to features illustrated on a previous site plan. One day of diving was undertaken on the site during the HWTMA fieldwork within the Western Solent 29 June – 3rd July.

The diver survey revealed that the Needles protected wreck site remains a relatively stable site despite the dynamic environment. Two noticeable changes were observed in this monitoring dive compared to the last HWTMA dive on site in 2004:

- The carronades below the west face of Needles Rock are now more exposed, with the end of the muzzles now visible. This could be due to a drop in seabed material or increased erosion of the muzzles; or could be a temporary seasonal fluctuation.

- In the Needles Channel iron knees not previously surveyed were observed. Their exact position has not been established but they are believed they may be within the protected area.

The artefacts on the site are in a generally satisfactory condition and environment, leading to the conclusion that the threat to the general stability of the larger remains is minimal and the risk can be assessed as **LOW**. However, due to the dynamic nature of the site and the changing levels of exposure of artefact remains, as recorded in the fieldwork in 2009, regular monitoring of this site is crucial as the level of risk can be subject to change.

In the survey, iron knees not previously recorded were observed in the Needles Channel to the north east of the main site. HWTMA divers have been locating scattered wreckage to the north east of the main site over the previous few years. It is currently unclear which wrecks this material is associated with. Therefore, the HWTMA believe that further targeted survey work in this area would contribute to clarify this issue; it may be possible to combine this work with other planned fieldwork in 2010 through the 'Archaeological Atlas of the 2 Seas' project.

1. PROJECT BACKGROUND

1.1 Introduction

The Solent has long been recognised for the importance of its marine heritage. The diversity and density of sites makes it one of the highest potential marine areas of England. The HWTMA are well placed to respond on a regional basis to sites and finds which require investigation and monitoring whether these are underwater or are in the intertidal zone. The Solent Marine Heritage Assets project has provided funding to enable the HWTMA to work together with EH to target work on marine heritage assets to enable more effective regional management and also provide a possible model for cost-effective support for developing national structures.

This report particularly focuses on the monitoring that was undertaken on the Needles protected wreck site on 3rd July 2009, in accordance with a Brief for Archaeological Services provided by EH.

1.2 Site Location

The subject of this report is the Needles protected wreck site. The site is located within a distance of 200m of the point 50° 39. 70' North, 01° 35.43' West WGS84, excluding any part of the area which lies above the high-water mark of ordinary spring tides. The site contains the remains of numerous wrecks, with two being so far identified as of particular historic significance; HMS *Assurance* (1753) and HMS *Pomone* (1811).

1.3 Solent Heritage Assets Protect: Aims & Objectives

The overall aim of the Solent Marine Heritage Assets project is to provide funding to enable the HWTMA to work together with English Heritage to target work on marine heritage assets to enable more effective regional management and also provide a possible model for cost-effective support for developing national structures.

The project allows for the flexible targeting of site investigation, monitoring and reporting. It is supporting:

- Work on Solent Designated Historic Wreck Sites;
- Investigation and monitoring on non-designated wreck sites; and
- Investigation and monitoring of non-wreck sites.

The objectives comprise:

- To undertake investigation and monitoring of marine heritage assets to address specific management and/ or protection issues
- To involve students and volunteer divers in the investigation of marine heritage assets;
- To report on condition of a range of marine heritage assets to relevant regional and national curators and advisory bodies;
- To provide locally based, reactive, ability to investigate submerged heritage assets in fulfilment of aims and priorities of both the HWTMA and EH; and

- To assess the effectiveness of the project as a model for the support of locally based investigation, monitoring and reporting for marine heritage assets.

1.3.1 The Needles Objectives
The overall objective was to reach recording Level 2a as defined by EH.

Level	Character	Scope
2a	Non-intrusive	A limited record based on investigations that might include light cleaning, probing and spot sampling, but without bulk removal of plant growth, soil, debris etc.

The specific tasks were to:

- Undertake survey of the site, identifying and recording in detail any vulnerable elements of the structure, with particular emphasis on the conditions of any exposed material.
- Produce a structured record of field observations. Key elements are to be subject to detailed examination and recording (position by diver survey, taped measurements, photographs and video and written database entries).
- Undertake a Risk Assessment with reference to English Heritage's *Risk Management Handbook* (November 2008).

2. THE NEEDLES SITE

2.1 Site History and Significance

As a prominent navigational hazard the Needles has claimed many ships over the centuries. The protected area contains the visible remains of at least three wrecks; HMS *Assurance*, a 44 gun, fifth rate warship lost in 1753; HMS *Pomone*, a 38 gun, fifth rate warship lost in 1811; and the *Anglo Saxon* lost in 1879.

HMS *Assurance* was a British naval vessel operating in the region of the Spanish-American colonies. The 44-gun HMS *Assurance* was lost on the return journey from Jamaica in 1753. The ship was returning with the retiring Governor, Edward Trelawny, when it was wrecked on the Needles Reef on 24th April 1753.

HMS *Pomone* was a Leda class 38 gun frigate, constructed in 1805 at Frinsbury near Chatham. The ship was returning from the Mediterranean after five years at sea with important intelligence for the King of England. Passengers onboard included Sir Harford Jones, the retiring English Ambassador to Persia along with his colleague, Major-General Sir James Sutherland who was acting as escort to two young Persian princes from Azerbijan. During stopovers at Malta and Sardinia, meetings of great importance were attended and further sensitive documents were collected for the attention of the Foreign Secretary. The *Pomone* left Sardinia in haste to fulfil the errand but struck the Needles in the evening of 14th October 1811.

Figure 1 - Artist's impression of the wrecking of the Pomone
(copyright courtesy of Rev. Sutherland Bell)

HMS *Pomone* was holed and wedged between the submerged Goose Rock and the outer most Needle. Fortunately, the winds were light; although some members of the crew believed that they were witnessing their last hours and turned to the ships rum ration. Their actions were recorded by Sir Harford Jones. The crews fears were unwarranted as the ship's flares were seen from Yarmouth and by the end of the night all 283 officers and crew plus passengers were rescued by local pilot vessels and boats of the guard ship *Tisiphone*. Much of the ships contents were 'liberated from the sea' by local boatmen as it broke up over the following days.

The historic significance of the Needles site has been illustrated through its designation under the Protection of Wrecks Act (1973), through which shipwrecks deemed to be of historical, archaeological or artistic importance can be designated as a restricted area. The Protection of Wrecks Act was introduced as a means to prevent further looting of shipwrecks. Although not originally intended to be a long-term tool for heritage protection, the Act has remained the main piece of legislation for protecting underwater cultural heritage in the UK since its inception. The Needles site is noteworthy as one of the few protected wreck sites with an area designation that covers multiple wrecks.

The Needles site can be considered by assessing its significance according to English Heritage's *Conservation Principles, Policies and Guidance* (2008). The statutory designation judges a particular value to be above a defined threshold of importance, but day-to-day management takes into account all the values that contribute to a sites significance. Heritage values as assessed by English Heritage's *Conservation Principles, Policies and Guidance* (2008) can include:

- evidential value;

- historical value;
- aesthetic value;
- communal value.

These values are exemplified through the Needles site. Both the *Assurance* and the *Pomone* are naval ships, and as such illustrate important aspects of the nation's military history through their material remains. Through comprehensive topographical survey of the site, the artefact distribution has revealed important historical information regarding the wrecking process of the *Pomone*. The creation of a dive trail has allowed visiting divers on site, enabling a wider audience to be given the opportunity of viewing *in situ* remains and appreciating the aesthetic value of a protected wreck site. As part of the navy both the *Assurance* and the *Pomone* are representative of the social values invested in the navy, as symbolic of the nation as a whole and embodying British identity overseas.

2.2 Site Environment

Guarding the western entrance to the Solent the Needles occupy an important strategic position. The Needles form the western extreme of a ridge of chalk which runs east to west across the Isle of Wight. They are the remnants of a ridge that once extended across the western entrance to the Solent to Handfast Point on the Isle of Purbeck. Rising sea levels over the last 15,000 years eroded this ridge to form Christchurch Bay and the western Solent.

Over time chalk stacks have been formed, eroded and collapsed leaving concealed hazards just below the water. The chalk gullies dominate the underwater landscape; some of these gullies are several metres deep (Figure 2). To the north of the Needles site there is a particularly impressive drop off, this marks the edge of the chalk platform. The harsh tidal regime in the area means that there is little sediment covering over much of the seabed. However, in the base of the gullies there can be an accumulation of deposits. These are mostly course-grained materials and are dominated by pebbles and stones. The environmental conditions and geology have shaped the wrecking process of the vessels lost here. This has had a dramatic effect on the nature and preservation of archaeological materials discovered.

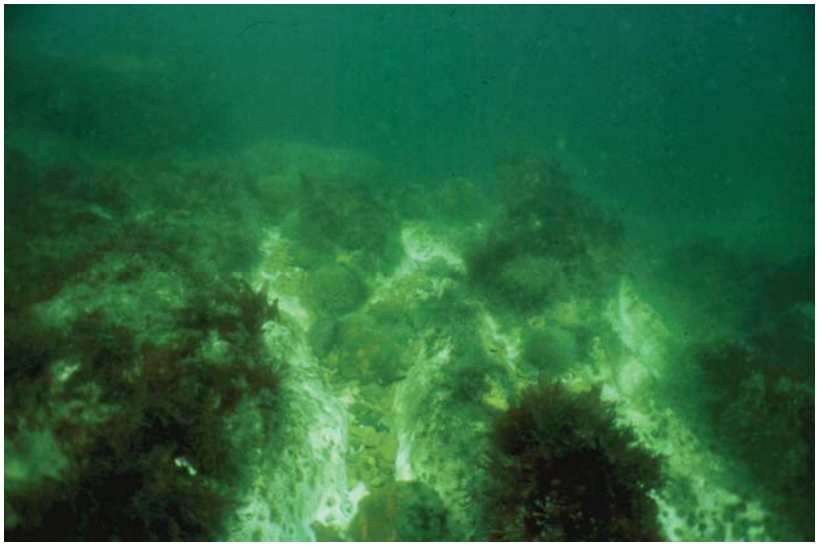

Figure 2 - Chalk gullies off the Needles

The wreckage lies within an overall depth range of 3-10m on an exposed wave cut platform terminated to the north by an underwater cliff. It is an area of sharp eroded chalk gullies and ridges, formed into east-west aligned channels along the remains of the former chalk ridge. The site is west facing and subject to the full onslaught of the prevailing weather and a fetch that traverses the Atlantic Ocean. Due to the exposed nature of the wreck site, very little organic material remains and all the ships structure has been dispersed. The wave cut platform is heavily eroded, and is inhospitable to all but the most resilient flora.

The tidal regime at the Needles site can be extreme, particularly during spring tides when the slack water period is limited to about 40 minutes. The funnelling effects of the western Solent mean that water is either being forced into the narrow Needles channel or racing out on the ebb tide. Spring tides occur every two weeks, these higher high tides and lower low tides mean increased water movement. The faster water currents move and transport more sediment in the water column, this reduces the chances of good visibility and the length of viable diving time on site. During neap tides there is an opportunity to take advantage of longer periods of slack water of about 90 minutes, it is particularly good to dive the site on the high water slack. With little water movement and optimum weather conditions there can be eight to ten metres visibility on site. The weather can have a significant effect on the diving conditions. A south westerly wind will quickly increase swell and pick up wave heights at the surface making dive preparation uncomfortable and potentially more hazardous. Underwater, the surge can quickly increase as some parts of the site are only six metres deep and this can soon make diving difficult. Despite the variable environmental conditions on site the Needles remains one of the most dramatic places to dive around the south coast of Britain. The site is considered suitable for the more advanced diver.

2.3 Site Ownership

The Needles site is designated under the Protection of Wrecks Act 1973 and as such requires special permission from the Department for Culture, Media

and Sport in order for any work to take place on the site. The HWTMA has acted as licensee for the Needles site since 2002, and prior to this has supported survey and investigation since 1992. The Crown Estate own the seabed on and within which the wrecks lie. The site also lies partially within the South Wight Maritime Designated Special Area of Conservation which is designated for the reefs and submerged or partially submerged sea caves. The chalk ridges off the Isle of Wight of which the Needles are part, contain some of the most important sub-tidal British chalk reefs representing over 5% of Europe's coastal chalk exposures. They support a diverse range of species in both the sub-tidal and intertidal zones (Joint Nature Conservation Committee, 2004).

2.4 Licensing History

The Needles site was first identified in 1969 by Derek Williams and when it was designated in 1975 he became the first licensee. Derek Williams later transferred his license to representatives of the Isle of Wight Archaeological Committee, with Dr David Tomalin being licensee until the HWTMA took on the role in 2002.

The HWTMA has a long history of involvement with the Needles site since its formation in 1991. The Needles survey was one of the first diving projects the HWTMA undertook. Since this date the HWTMA has performed an active monitoring and investigation role on the site. In recent years access has been hampered by poor weather conditions which has reduced the frequency of visits.

2.5 Summary of Archaeological Investigations

There has been a history of archaeological investigation around the Needles site. Search and recovery of artefacts from ships lost on the Needles began in 1969 following the discovery of a large assemblage of shipwreck material by Derek Williams. Further investigations were the excavation of the *Campen* site in the 1970's (Larn, 1985) and the work on HMS *Pomone* and HMS *Assurance* sites in the late 1970's and 80's (Tomalin *et al,* 2000).

Figure 3 - Coin from the Assurance *site (copyright Needles Project)*

Ordnance and numismatic evidence gathered in the early years testified to the presence of the HMS *Assurance* (Figure 3). Accordingly, the site was designated the HMS *Assurance* Protected Wreck Site in 1975 under the Protection of Wrecks Act 1973. Work on the site continued in 1977 and 1978 with a team from the Portsmouth Royal Naval Sub-Aqua Club who conducted detailed surveys. The surveys led to a revised interpretation which included the involvement of two distinct ships. Originally Derek Williams had been researching HMS *Assurance*, when John Bingeman became involved in 1978 he realised that the site comprised more than one wreck. The seabed investigations focused first on the ordnance: the relative positions suggested that material from HMS *Assurance* lay to the north while HMS *Pomone* lay to the south.

Figure 4 - Intaglio from the Pomone *site (copyright Needles Project)*

Active survey and excavation in the gullies around the site continued with artefacts being raised into the 1980's. In total, some 98% were eventually attributed to the wreck of the *Pomone*; an example can be seen in Figure 4. With the identity of the vessel known, attention was drawn to their distribution as core to understanding the wrecking process. All the coherent structure had been lost and it initially appeared that the finds were randomly strewn or 'scrambled' but when their locations were added to the *Pomone* database, distinct patterning became apparent. Notwithstanding the wreck being entirely broken up, the artefacts had become trapped in the gullies and potholes in the seabed where many had very little opportunity to move. By studying their distribution and by drawing correlations with the identifiable ships' fittings and the documented wrecking event, it was eventually possible to reconstruct the approximate position and orientation of the settled vessel (Figure 5).

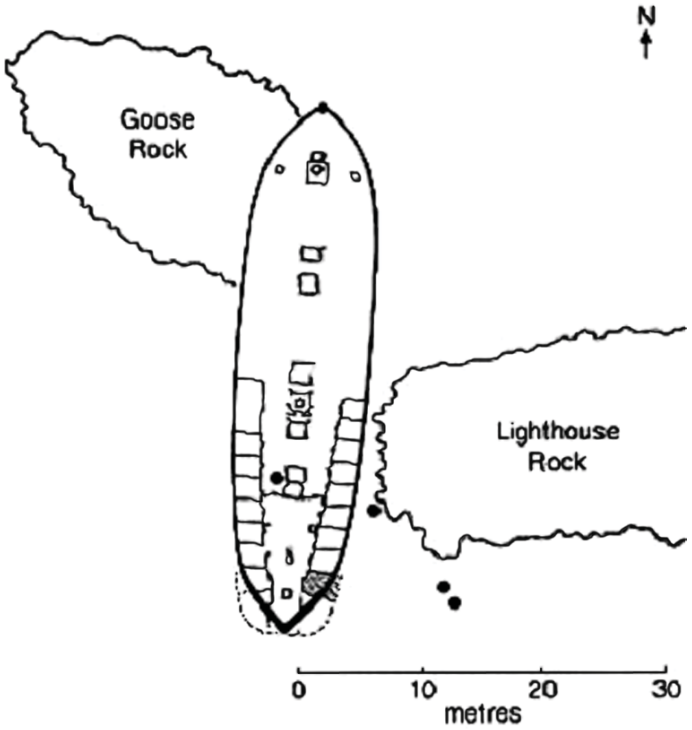

Figure 5 - Plan of the Pomone *with position of loss (Tomalin* et al*, 2000 p.24)*

By 1985, over 3,500 carefully recorded artefacts had been recovered and catalogued. The majority of artefacts recovered during these investigations were large and robust objects that best withstood lengthy exposure and were visible close to the seabed surface. Artefacts excavated from areas of deeper sediment, usually in the base of gullies or in pockets in the chalk, were predominantly metal; some of these have survived well. Organic materials did not survive as well due to the paucity of sediment covering; this meant little or no protection from water movement or biological organisms.

In 1992 collaboration between the HWTMA, the County Archaeologist and the Nautical Archaeology Society (NAS) saw a team return to the site with a new brief: 'to produce a detailed topographical survey in order to model and analyse the environmental mechanisms and their interaction with the ship'. The rational was to correlate the artefact distribution with the known ship design. This would provide a valuable insight into the wrecking process of ships in similar circumstances. Work continued through the 1990's, steadily building a 3 dimensional network of measurements. The methods proved successful although the large and irregular height variations of the gullies and exposure to swell in a fast running tide made work difficult and time consuming. In 1997 technology provided the answer when the HWTMA organised a survey in conjunction with Submetrix UK Ltd. The survey tool used was the ISIS 100 (Interferometric Seabed Inspection Sonar), Swath Bathymetry system. This provided a model of the seabed topography (Figure 6) to help understand the distribution of material derived from the wreck of the *Pomone* and to provide a template upon which a dive line or trail could be placed (Momber & Geen, 2000).

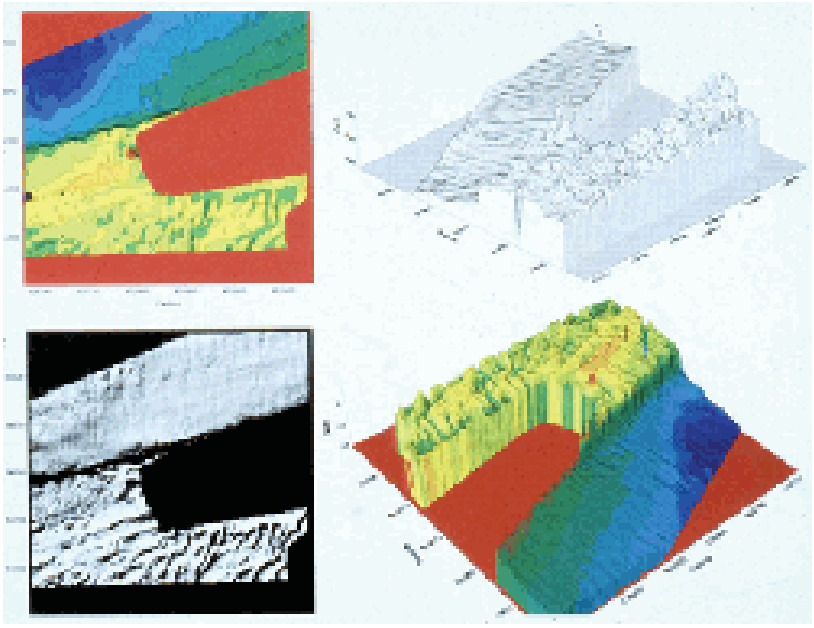

Figure 6 - Images of the Needles from ISIS 100 swath bathymetric survey data (copyright Submetrix/ SEA)

Experience during the HWTMA western Solent Marine Archaeology Project (SolMAP) in 1997 and 1998 demonstrated that diving on the Needles wreck site can be a confusing experience for those who do not know it. This prompted the placing of a line on the site in 1998 to facilitate passage around the main features. This greatly aided navigation and increased productivity allowing divers to get to their place of work with ease.

Work to install a Dive Trail to help enable public access to the Needles site first began in 1999 based on the line laid around the site. This ran from the Southern side of the Needles along the western edge of Needles rock and looped around Goose Rock. Unfortunately, storms in 1999 lifted the cable over the top of Goose Rock (over 7m in height), leaving it in a tangle to the east side. Subsequently in 2000 sections of this line were replaced by a more visible material and further 'sinkers' or 'stations' deployed to hold them in place. During the 2001 and 2002 seasons diving on the Needles site was infrequent due to poor weather conditions which meant planned refinements of the 'proto' dive trail were unable to occur. The dive line was reconfigured in 2003 when it was integrated more closely with the seabed. This meant that the line was protected from some of the worst weather conditions as it was sheltered within gullies or in the lee of larger chalk features. The majority of the diver trail route was marked with a visible blue covered line. The line is made from twisted steel cable encased in a blue plastic covering. During the 2004 season, as part of the Leader+ / EH funded project further diving was undertaken in order to enhance the sections of line and to test a diver trail route and booklet (Satchell *et al,* 2005).

The operation of the Needles dive trail was not as successful as hoped, primarily due to the very unpredictable weather conditions in the area. They dynamic conditions have also affected the installation of trial lines and

markers, many of which are no longer present on site. This has also affected archaeological work; between 2005 to 2008 no diving took place on the site, due to poor weather during the HWTMA's fieldwork days in the Western Solent. The diving carried out at the Needles site in 2009 in connection with the Solent Marine Heritage Assets project provided the first monitoring opportunity for a number of years.

3. MONITORING METHODOLOGY

3.1 Diving

The HWTMA is registered as a diving contactor with the Health and Safety Executive (HSE). Diving involving HWTMA staff was undertaken under the HSE Scientific and Archaeological Approved Code of Practice.

Prior to diving a Project Plan was developed which included detailed information on:

- Diving team composition
- Boat (including safety features and facilities, numbers allowed on board, etc.)
- Tides (times and strengths)
- Site Risk Assessment (this is a general assessment of potential risk, it is augmented by a daily risk assessment completed on site)
- Provisional daily operations plan
- Procedures for use of any archaeological survey equipment
- Daily supervisor check list

3.2 Survey

The survey methods used during the assessment of the Needles site were diver survey encompassing taped measurements, site photography and video. One day of diving was undertaken on the site.

Recording was based on the Molas recording system, on which the HWTMA recording sheets have been based. The main adaptation of the Molas system for work in the underwater zone is the addition of a 'Dive Log Sheet' and an 'Archaeological Record Sheet', the former are used as the primary numbering system and are used for logging individual divers. Each diver fills in an Archaeological Record Sheet which provides details of specific work undertaken on each dive and references any numbers utilised e.g. context numbers, feature numbers and artefact numbers.

In summary the principal record sheet system includes:

- Dive Log Sheet
- Archaeological Record Sheet
- Context Log and Record Sheets
- Drawing Index
- Finds Index and Record Sheets
- Sample Index and Record Sheets
- Timber Index and Record Sheets
- Photo Index

- Video Index and Log Sheets

3.3 Side Scan Sonar

During fieldwork on the Needles site a side scan sonar was deployed to record images of the seabed remains. The side scan used was a Humminbird 1197C Side Imaging Sonar / External GPS Combo with a fixed through-keel transducer. This equipment is fitted to dive boat *Wight Spirit*, and has provided additional information on the site.

4. SURVEY RESULTS

The survey of the site enabled the identification and recording of vulnerable elements with particular emphasis on the condition of exposed material. This allowed a more comprehensive assessment of the site in terms of its vulnerability and risk (see **Section 5.2**).

4.1 Diving Conditions

The Solent Marine Heritage Assets is based on being able to undertake diving on sites in conjunction with other planned HWTMA projects. This allows necessary monitoring dives to take advantage of ongoing HWTMA diving fieldwork by including additional diving days within other work. During the week of diving undertaken by HWTMA in the Western Solent in 2009 two attempts were made to dive on the Needles site. On Monday 29th June 2009 a dive was aborted due to poor weather conditions. Conditions improved and on Friday 3rd July 2009 the dive operation was completed. The tasks undertaken were limited by the diving conditions, restricted by the availability of slack or near slack water. Taped measurements of observed archaeological features were not possible; instead their location was noted in reference to features illustrated on a previous site plan (see Appendix II). The visibility ranged from two to four metres allowing a video record to be made of the site. One dive was conducted to a maximum depth of 12 metres with a total of 176 minutes bottom time (see Appendix III for dive logs).

4.2 Diving Operation

The Needles site was subject to a diver survey with video record to monitor the site for any significant recent change including the recording of any vulnerable elements of the structure. Artefacts were recorded and if not already shown on a previous site plan (see Appendix II), located in relation to those illustrated on the plan.

4.3 Archaeological Features

The Needles wreck site lies on an exposed platform which consists of a series of gullies and crevices. The cultural material at the site consists of robust, largely metal, objects and as such the main wreck site tends to remain stable. On the site the artefacts that can be seen include the carronades and anchors from HMS *Pomone* and the ballast blocks from the *Anglo Saxon,* along with numerous other instances of iron or lead shot (Figure 7).

Figure 7 - Lead shot in gully

All the features observed are shown in Appendix I – the Archaeological Record Log, alongside their position on the site plan and the time code of the relevant section of the video record. The Needles site plan showing the dive trail markers (see Appendix II) has been utilised as this gives reference points for some of the artefacts observed during the survey. The positional relationship between observed features and the numbered dive trail stations has been recorded and is included in Appendix I. The diver trail is not currently operational due to the loss of marker stations and problems with maintenance and logistics of running the trail. The main features encountered in the survey of the site were:

- The first archaeological features encountered were ballast blocks from the *Anglo Saxon* remains to the east of Gull Rock and to the north of Needles Rock (Archaeological Record Log (ARL) 001) (Figure 8).

Figure 8 - Ballast blocks from the Anglo-Saxo*n (Location 4) (HWTMA/ T.Jenkins)*

- The dive team then proceeded south to the west face of Needles Rock where carronades are located (ARL 002) (Figure 9). The end of one carronade is more exposed than previously, with the end of the muzzle now visible (Figure 10). The muzzle was not exposed to this extent in 1998, but it is unknown whether this is a permanent change due to a drop in seabed or erosion of the muzzle or if it is possibly seasonally dependent on weather and tides moving sediment in the area.

Figure 9 - Diver illustrating exposed muzzle of carronade (Location between 4 – 3) (HWTMA/ T.Jenkins)

Figure 10 - Exposed muzzle of carronade (HWTMA/ T.Jenkins)

- Next to carronades mentioned above a ballast bar was observed (ARL 003 and Figure 11), an artefact from HMS *Pomone*, and an eroded cannon ball was noted situated next to the ballast bar (ARL 004).

Figure 11 - Ballast bar from the Pomone (Location between 4 – 3) *(HWTMA/ T.Jenkins)*

- Approximately 3 metres south of the carronades a distinctive cannon ball was observed (ARL 005 and Figure 12) with a loose copper pin next to it (ARL 006 and Figure 13).

Figure 12 - Cannon ball (Location 3) (HWTMA/ T.Jenkins)

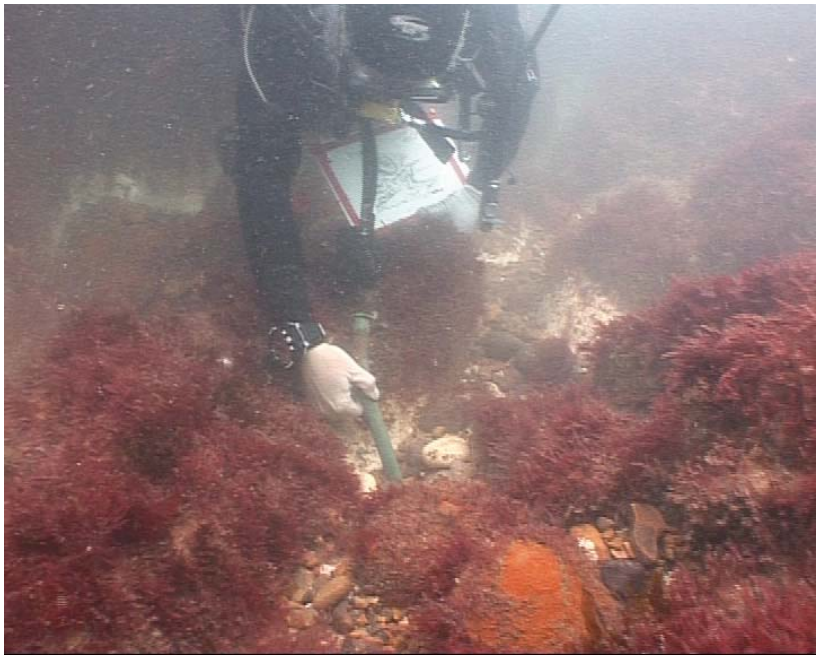

Figure 13 - Copper pin (Location 3) (HWTMA/ T.Jenkins)

- Proceeding to the south west corner of Needles Rock the mound of ballast bars was observed that are noted as location 2 on the dive trail site plan and ARL 007 (Figure 14). No visible changes were observed.

Figure 14 – Mound of ballast bars (Location 2) (HWTMA/ T.Jenkins)

- The dive team moved east along the south side of Needles Rock to cannon noted as location 1 on the dive trail site plan, ARL 008 (Figure 15). No visible changes were observed.

Figure 15 - Cannon on south side of Needles Rock (Location 1) (HWTMA/ T.Jenkins)

- The dive team retraced their path around the west side of Needles Rock and then around the east side of Goose Rock. To the east of Goose Rock the blue line laid as a dive trail in 1998 was still visible, although the dive trail is no longer operational. To the east of Goose Rock more ballast from the *Anglo Saxon* wreck was visible, noted as location 4 on the dive trail site plan (ARL 009 and Figure 16).

Figure 16 - Ballast blocks from the Anglo-Saxon (Location 4) *(HWTMA/ T.Jenkins)*

- On the north side of Goose Rock the three anchor site was observed (ARL 010 and Figures 17 and 18), at location 5 on the site plan. No visible changes were observed, as can be seen from the comparative images below.

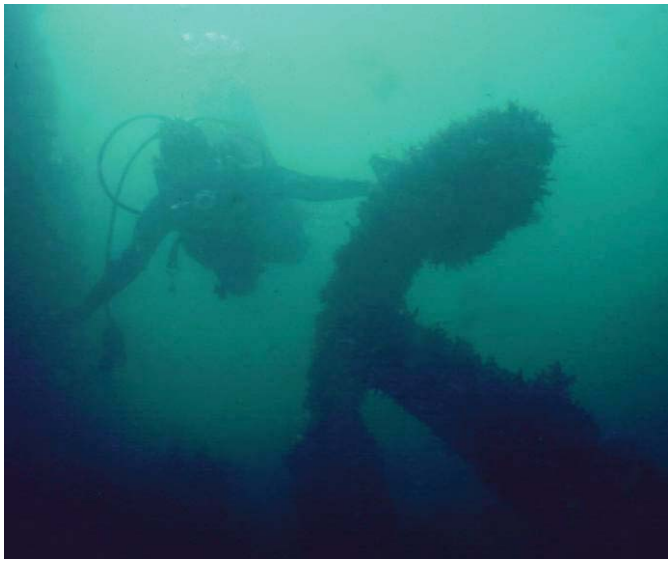

Figure 17 – Photo from 2004 of HMS Pomone *anchor (Location 5) (HWTMA)*

Figure 18 - Photo from 2009 of HMS Pomone *anchor (Location 5) (HWTMA/ T.Jenkins)*

- Moving west from the north side of Gull Rock gullies and pot holes were full of ballast, scattered ships fittings and other artefacts (ARL 011 and Figure 19).

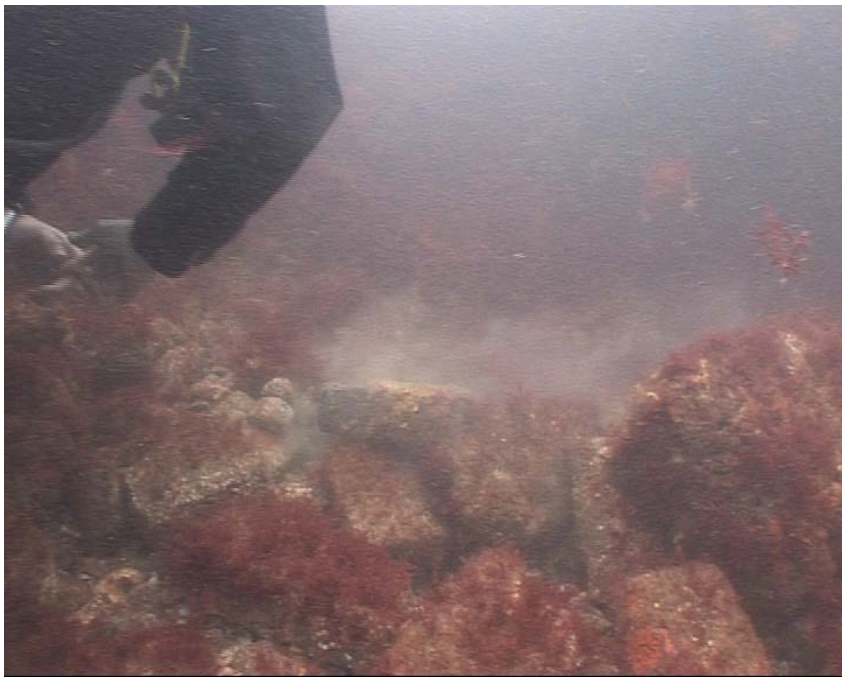

Figure 19 - Erosion pothole with ballast and ship's fittings (Location between 5 – 6) *(HWTMA/ T.Jenkins)*

- Moving further to the north into Needles channel a new discovery of iron knees was made (ARL 012 and Figure 21), similar from those identified and recorded in 2000, (Figure 20), (HWTMA, 2000). This provides more evidence that there may be further material remains in the Needles Channel immediately to the north of the chalk plateaux.

Figure 20 - Iron knees to the north of the Needles site recorded in 2000

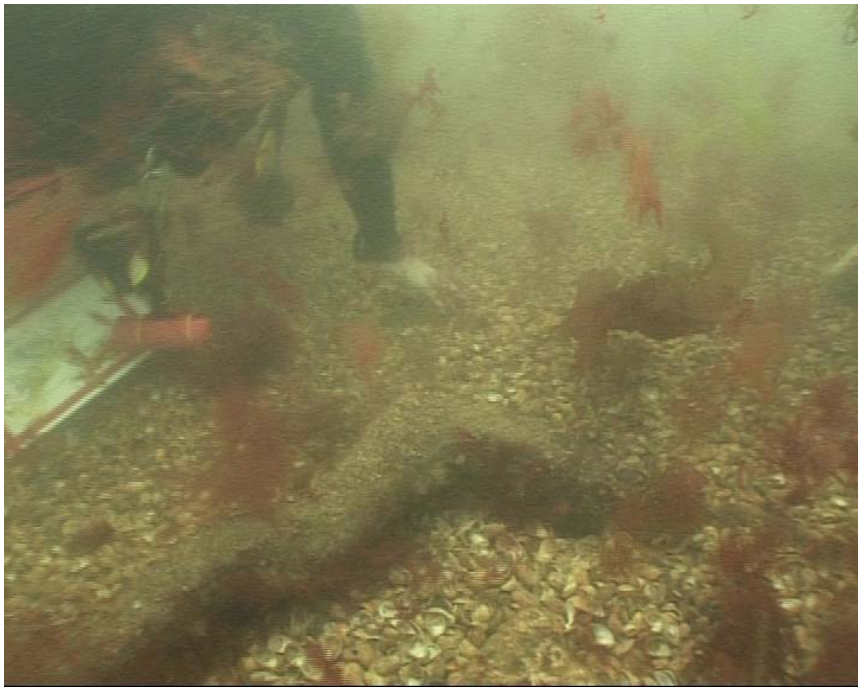

Figure 21 - Iron knees to the north of the Needles site recorded in 2009 (Location between 5 – 6) (HWTMA/ T.Jenkins)

4.4 Side Scan Sonar Results

During the work on site out in 2009 a side scan sonar image was also recorded showing possible further cannon remains in the channel to the north east of the main site. The dive boat was heading west at the position 50° 39. 76' North 0° 35.59' WGS84 when the side scan image (Figure 22) was recorded.

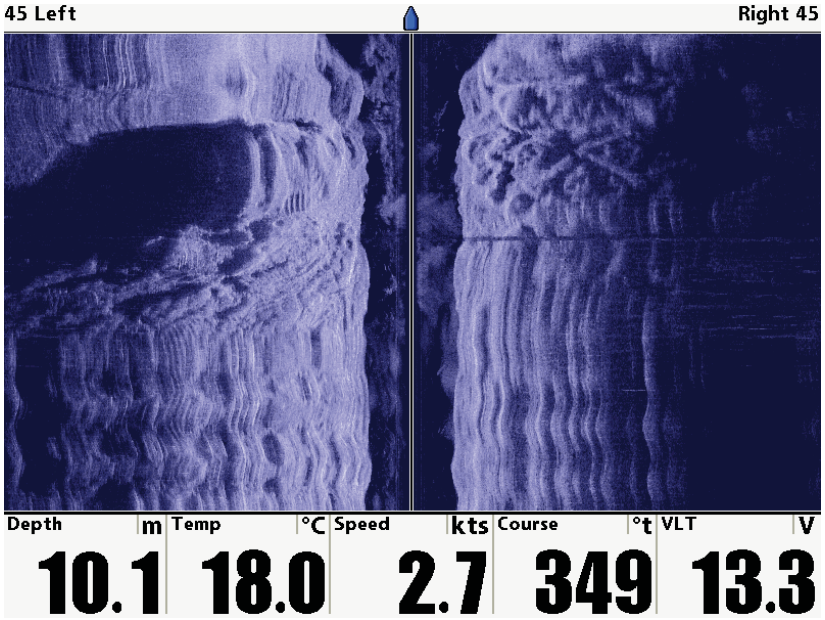

Figure 22 - Side scan sonar image of cannon to the north east of the main site (copyright Dave Wendes)

5. ASSESSMENT & CONCLUSIONS

The project has been successful in achieving the main aims of the survey of the Needles protected wreck site, which included identifying and recording vulnerable elements of the structure, especially exposed material, and undertaking a risk assessment of the site. Additionally the HWTMA has been able to provide additional information on further wreck material which was gathered from side scan sonar equipment.

5.1 Survey Assessment

The diver survey revealed that the Needles protected wreck site remains a relatively stable site despite the dynamic environment. The material remains are of a robust nature, consisting of metal objects with limited susceptibility to swift degradation. As such, the main wreck site has not changed drastically from season to season throughout the HWTMA's involvement with the site. However, two noticeable changes were observed in this monitoring dive compared to the last HWTMA dive on site in 2004:

- The carronades below the west face of Needles Rock are now more exposed, with the end of the muzzles now visible. This could be due to a drop in seabed material or increased erosion of the muzzles; or be a temporary seasonal fluctuation (Figures 9 & 10).

- In the Needles channel iron knees not previously surveyed were observed (Figure 22).

And

- On the side scan sonar possible further cannon remains were recorded to the north east of the main site (Figure 23).

5.2 Historic Wreck Site Risk Assessment

Wreck/Site Name	***SI Number***
Needles	1998/1650

NMR / UKHO No.	***EH Region***	***Restricted Area***	***Principal Land Use***
	South East	200 meters	Coastland 1

Latitude (WGS84)	50° 39. 70' N
Longitude	0° 35.43' E

Class Listing	***Period***	***Status***
Fifth Rate Ship of the Line	Hanover	Protection of Wrecks Act 1973

Licensee	***Nominated Archaeologist***	***Principal Ownership Category***
yes	yes	other
Seabed Owner	***Navigational Administrative Responsibility***	
Crown Estate	nil	
Environmental Designations		
SAC		
Seabed Sediment	***Energy***	
gravelly sand	high	

Survival
very poor

Overall Condition	***Condition Trend***	***Principal Vulnerability***
generally satisfactory but with minor localised problems	declining	seabed erosion

Amenity Value: visibility
limited above bed structural remains and finds scatter with limited visibility and only 'legible' with further interpretative information

Amenity Value: physical accessibility	***Amenity Value: intellectual accessibility***
restricted: access subject to licence or other authorization	limited interpretation on or close to site with only one element

Management Action	no action required (routine monitoring by the licensee / archaeological contractor)													
Management Prescription	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**
			✓									✓		
Notes	The site lies at a depth of up to about 12-14 metres. It is a rocky area with variable sand or sediment cover. Larger iron objects are scattered over the site, and smaller items may be covered by pockets of sand in the uneven rock gullies and crevices. This is a very dynamic site which can be a problem for preservation, and means that smaller objects can be moved, or frequently exposed and buried. The site does not consist of completely buried remains, but is not affected by unauthorised intrusive activity. The risk of physical and/or biological decay is minimal despite the dynamic conditions of the site, due to the robust nature of the remaining artefacts on site. The major change recorded in this monitoring dive compared to previous seasons is the greater exposure of the muzzles of the carronades below the west face of Needles Rock, but this has not led to any perceivable degradation as yet. The artefacts on the site are in a generally satisfactory condition and environment, leading to the conclusion that the threat to the stability of the larger remains is minimal and the risk can be assessed as **LOW**.													

Data Source	licensee	***Date & Initials***	
Date of previous assessment:		Has an ecological survey been undertaken? Y / N	

5.3 Potential for Further Work

Due to the dynamic nature of the site and the changing levels of exposure of artefact remains, as recorded in the fieldwork in 2009, regular monitoring of this site is crucial as the level of risk can be subject to change. Site monitoring is needed to compare information and assess any further changes on the site.

In the survey, iron knees not previously recorded were observed in the Needles channel to the north east of the main site. The possible cannon remains recorded on the side scan sonar in 2009 were also located in the channel to the north east of the main site. This is a continuing pattern with HWTMA divers having located scattered wreckage to the north east of the main site during the previous few years work on the site. It is currently unclear which wrecks this material is associated with. Therefore, the HWTMA believe that further targeted survey work in this area would contribute to clarify this issue. The HWTMA may combine this work with other planned fieldwork in 2010, with funding provided through the Interreg IVA 'Archaeological Atlas of the 2 Seas' project.

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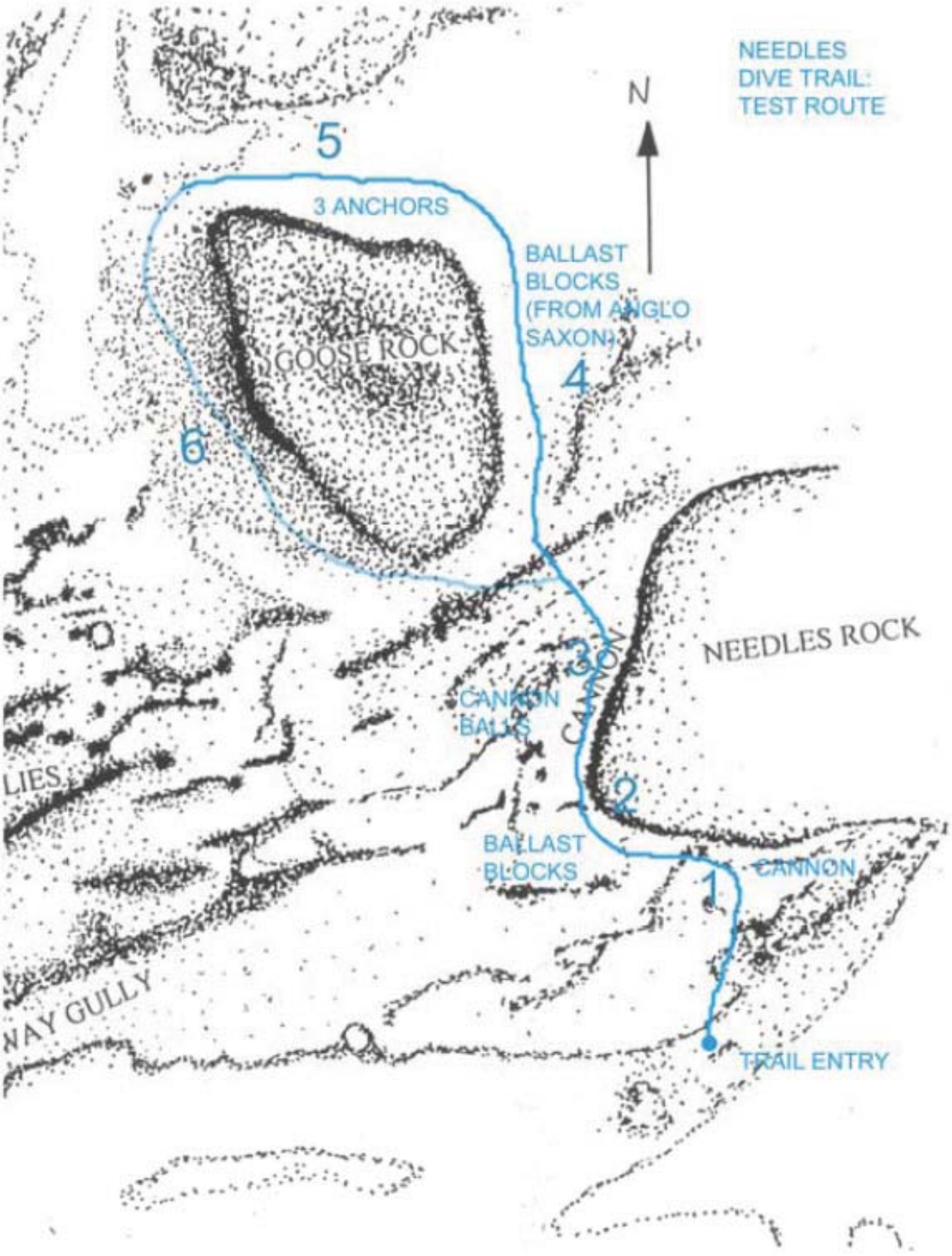
APPENDIX I – ARCHAEOLOGICAL RECORD LOG

No.	Object	Description	Location on dive trail site plan	Video Log
001	Ballast blocks	Ballast blocks / cargo believed to be from Anglo-Saxon wreck	4	3.06
002	Carronades	Carronades below west face of Needles Rock	4-3	5.25 – 7.49
003	Ballast bar	Ballast bar next to carronades from the wreck of the Pomone	4-3	8.51.07
004	Cannon ball	Eroded cannon ball next to ballast bar	4-3	8.59.04
005	Cannon ball	Cannon ball lying approx 3m south of carronades	3	9.41.23
006	Copper pin	Copper pin in gulley next to cannon ball	3	9.57.01
007	Mound of ballast bars	Mound of ballast bars, south west corner of Needles Rock	2	11.17.18
008	Cannon	Cannon on south side of Needles Rock	1	11.59-13.00
009	Ballast blocks	Ballast blocks / cargo believed to be from Anglo-Saxon wreck	4	14.16.22
010	Anchors	Three anchor site	5	15.05-16.20
011	Ballast	Inside erosion pothole full of ballast and scattered ships fittings	5-6	16.30 – 17.18
012	Iron knees	New discovery of iron knees. Similar from those identified and recorded by GM around 2000.	5-6	17.49 – 18.47

APPENDIX II – DIVE TRAIL SITE PLAN



APPENDIX III – DIVE LOGS

Location	Vessel	Supervisor
Needles protected wreck site	*Wight Spirit*	Julie Satchell

Log No.	Date	Diver Name	Duration (mins.)	Current	Visibilty
01	03/07/2009	Garry Momber	44	slight	1-2 metres
02	03/07/2009	Trevor Jenkins	44	slight	1-2 metres
03	03/07/2009	Lawrence Moran	44	slight	1-2 metres
04	03/07/2009	Victoria Millership	44	slight	1-2 metres