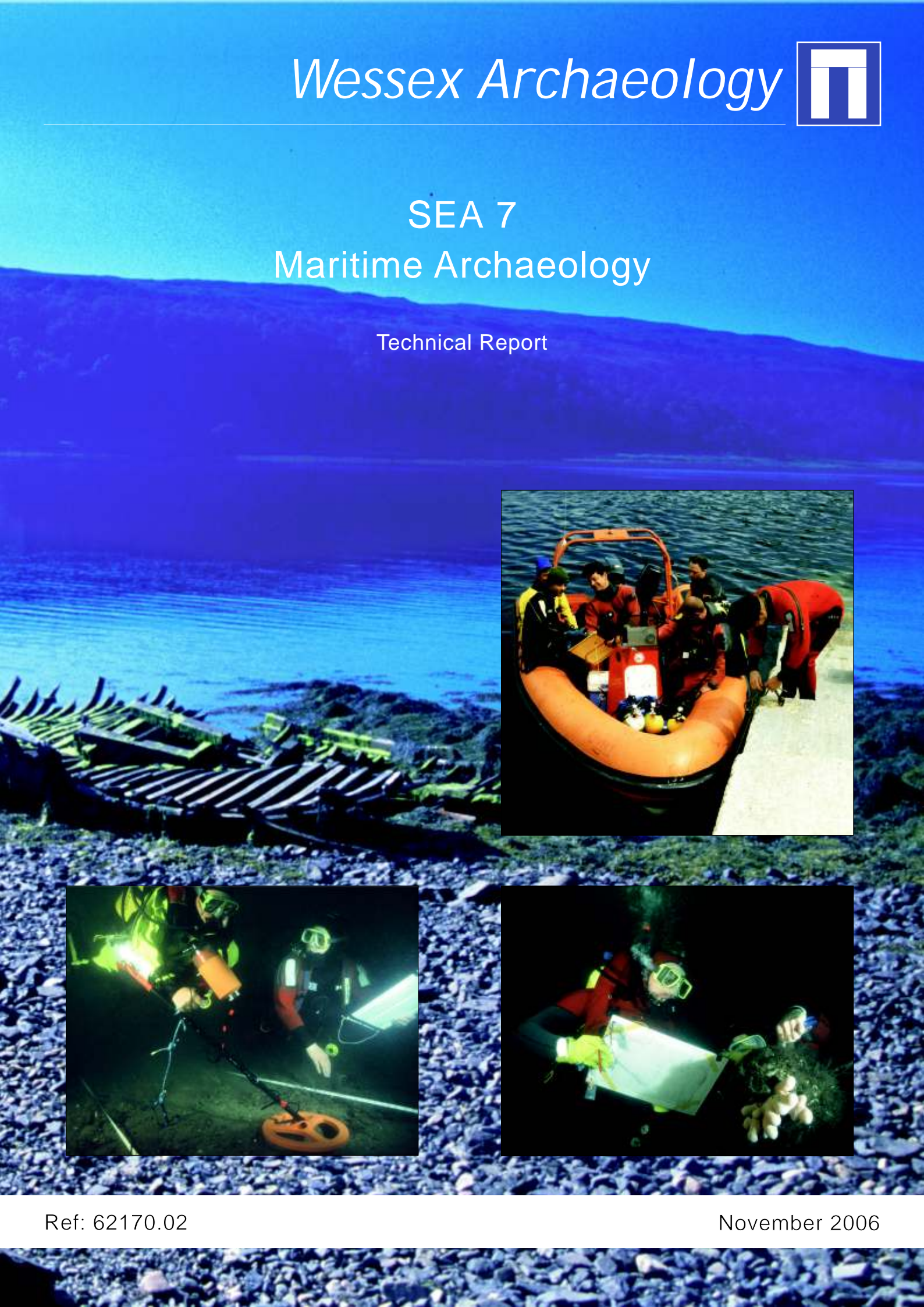# Wessex Archaeology

SEA 7
Maritime Archaeology

Technical Report

Strategic Environmental Assessment

SEA 7

MARITIME ARCHAEOLOGY

Technical Report

Ref: 62170.02
November 2006

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dti

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Strategic Environmental Assessment

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1.   METHODOLOGY

1.1.   Wessex Archaeology has been commissioned by Geotek Ltd. and Hartley Anderson Ltd. to advise on maritime archaeology in support of the Strategic Environmental Assessment for oil and gas purposes of area SEA 7 (see **Figure 1**) by the Department of Trade and Industry (DTI).

1.2.   In this report maritime archaeology is taken to refer to archaeology based on the investigation of the remains of ships, boats, maritime infrastructure and such other material remains as provide insights into past societies by way of their seafaring and sea-use. Archaeological issues relating to the wrecks of aircraft are included in relevant sections.

1.3.   A report specific to submerged prehistoric archaeology is being prepared as part of the Strategic Environmental Assessment of area SEA 7. Consequently, submerged prehistoric archaeology is not discussed in detail within this report but is alluded to when necessary to highlight the potential for maritime archaeological remains to be found within submerged prehistoric environments.

1.4.   This report comprises the following sections:

- Methodology;
- Background;
- SEA Objectives and Baseline;
- Links to other international, national, regional and local plans, policies and legal frameworks;
- History of maritime activity in the SEA 7 area;
- Previous investigations;
- Spatial distribution;
- Implementation.

1.1.   APPROACH

1.1.1.   A number of documentary sources were consulted for this report, ranging from local dive guides to comprehensive wreck inventories such as *Lloyd's Register of Shipwreck Losses* (Larn and Larn 1998), *Off Scotland: Maritime and Aviation Losses off Scotland* (Whittaker 1998) and the wreck inventory contained within *A Review of*

the Archaeological Resources of the Northern Ireland Coastline (McErlean, McConkey, McCooey and Williams 1998).

1.1.2.   A number of internet sources were also viewed. There is a considerable amount of data pertaining to maritime archaeology available on the web. However, the main sites that contain research data pertaining to the study area are the National Monuments Record of Scotland (NMRS), maintained by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). This database holds records for over 250,000 archaeological sites, or which around 14,417 are maritime sites.

1.1.3.   The Northern Ireland Sites and Monuments Record is also accessible online, via the Archaeology Data Service website. Of more relevance to maritime sites within Northern Ireland is the Maritime Record. This record contains more than 3000 records of wrecks but is not available online.

1.1.4.   The Excavation Database of Ireland contains summary accounts of all excavations carried out in Ireland from 1970. This database was studied as details of excavation reports on some submerged archaeological sites within the SEA 7 study area are included.

1.1.5.   WA has been responsible for Archaeological Services in Relation to the *Protection of Wrecks Act 1973* (PWA 1973) since being awarded the contract in 2003. Data and digital stills photography recorded during WA diving surveys carried out in the SEA 7 study area have been used for this report.

1.1.6.   Reference has been made to the draft SEA 7 report on prehistoric and early historic archaeological remains (Wickham-Jones and Dawson 2006).

1.2.   DIFFICULTIES AND LIMITATIONS

1.2.1.   It was not appropriate at a strategic level to attempt a quantitative baseline based on documented wrecks and casualties. As well as being a considerable task in itself such a baseline would have limitations in terms of its coverage in terms of period and ship type.

1.2.2.   All this primary data would need to be collated as duplicate records are likely to be encountered among the various accounts and each record would have to be carefully reviewed to ascertain the potential for seabed remains.

1.2.3.   The bulk of wreck material in the SEA 7 study area is likely to date from both World Wars, which produces its own limitations. Positions for vessels sunk during both wars are likely to be general and relate to the position of sinking, not the position of actual seabed remains. Therefore these positions can be used only as a general indication of areas of wreck potential. This poor positional information of vessels lost during the war was illustrated during the search for the *Bismarck* by Robert Ballard in 1998 and 1989. Despite having fairly accurate position from the Royal Navy for the last known position of the *Bismarck* shortly before sinking, Robert

Ballard and his team had to search over 200 square miles of seabed before the wreck was relocated (Delgado 1997, 63).

1.3. CONSULTATIONS

1.3.1. Within the SEA Directive there is a requirement for consultation of:

- Authorities which, because of their environmental responsibilities, are likely to be concerned by the effects of implementing the plan or programme, (and) must be consulted on the scope and level of detail of the information to be included in the Environmental Report.

1.3.2. The Directive defines the Consulting Bodies (Consulting Authorities in Scotland) relevant to the SEA 7 study area as being The Department of the Environment's Environment and Heritage Service, Northern Ireland (EHSNI) and Historic Scotland (HS).

1.3.3. The relevant Consulting Bodies/Authorities were approached and comments gratefully received from:

- Brian Williams of the EHSNI;
- Andrew Burke of HS;
- Wes Forsythe of the Centre For Maritime Archaeology, University of Ulster, Northern Ireland.

1.3.4. In addition the following parties were consulted for background information, data and/or comment

- Dr. Colin Martin, Vice President of the Nautical Archaeology Society (NAS);
- Dr. Niall Brady of the Archaeological Diving Company Limited;
- Dr Carol Swanson of the West of Scotland Archaeology Service;
- Jeff Keep of New Frontier Diving;
- Innes McCartney of Periscope Publishing Ltd.

1.3.5. Comments on a draft of this report were kindly provided by Caroline Wickham-Jones.

2. BACKGROUND

2.1. The Directive defines 'environmental assessment' as a procedure comprising the preparation of an Environmental Report on the likely significant effects of the draft plan or programme and carrying out consultation on the draft plan or programme. This report is intended to fulfil these requirements with regards to the maritime archaeological potential within the SEA 7 study area.

2.2.   Wessex Archaeology became involved with the SEA process in January 2005 when commissioned by Geotek Ltd. and Hartley Anderson Ltd. on behalf of the DTI to write a report advising on maritime archaeology in Area SEA 6.

2.3.   Reports specific to submerged prehistoric archaeology have been prepared for Area SEA 2 through to and including area SEA 6. Area SEA 6 was the first area to be reviewed with respect to maritime archaeological remains.

3.   SEA OBJECTIVES AND BASELINE

3.1.   SEA directive 2001/42/EC is Europe-wide legislation requiring environmental assessments of the effects of certain plans and programmes on the environment. It was transposed into UK Law in 2001. This piece of legislation seeks to cover plans and programmes at the strategic level and can be seen as a continuation of EC directive 85/337/EEC which requires environmental impact assessments of individual developments.

3.2.   In Scotland the SEA Directive was transposed into law on the 20th of July 2004, through the *Environmental Assessments of Plans and Programmes Regulations* (Scotland) 2004. The Scottish Executive policy in regard to the SEA process and sustainable management of the historic environment is set out within a Historic Scotland (HS) Document: *Passed to the Future* (HS 2002).

3.3.   The Scottish Executive policy '…recognises the role of strategic environmental assessment in managing adverse impact on the historic environment, and its potential for minimising conflict by adopting an integrated approach to decision making.'

3.4.   In Northern Ireland the SEA Directive was transposed into law on the 21st of July 2004 through the *Environmental Assessments of Plans and Programmes Regulations* (Northern Ireland) 2004.

4.   LINKS TO OTHER INTERNATIONAL, NATIONAL, REGIONAL AND LOCAL PLANS, POLICIES AND LEGAL FRAMEWORKS

4.1.   INTERNATIONAL

4.1.1.   The SEA 7 area beyond territorial waters falls within the UK Continental Shelf. The UK Continental Shelf (UKCS) comprises those areas of the sea bed and subsoil beyond the territorial sea over which the UK exercises sovereign rights of exploration and exploitation of natural resources. While current international law in respect of the Continental Shelf is unequivocal that wrecks do not form part of the natural resources of the Continental Shelf that coastal states are entitled to regulate, some indirect regulation arises from the environmental controls placed on the regulated exploitation of natural resources.

4.1.2.   In particular, insofar as Continental Shelf activities are subject to *Environmental Impact Assessment under European Directives* (85/337/EEC and 97/11/EC), the effects of those activities on the archaeological heritage have to be addressed and mitigation proposed. Similarly, the effects on the archaeological heritage of

Continental Shelf activities have to be assessed by virtue of the *Strategic Environmental Assessment Directive.*

4.1.3. Archaeological material from beyond territorial waters may also be subject to the provisions of the *Merchant Shipping Act 1995* (MSA 1995)*,* as wreck found or taken into possession outside UK waters but brought into UK waters must be reported to the Receiver.

4.1.4. The provisions of the *Protection of Military Remains Act 1986* (PMRA 1986) in respect of Controlled Sites are applicable in international waters, which would include the UK Continental Shelf, though they are enforceable only in respect of British-controlled ships, British citizens, and British companies. This has significant relevance given the sheer volume of vessels that were lost on convoy duty during both World Wars in area SEA 7.

4.1.5. A broader context is provided by international law, represented by customary law and the conventions to which the UK is party. *The United Nations Convention on the Law of the Sea 1982* (UNCLOS 1982), the *European Convention on the Protection of the Archaeological Heritage (*Revised) 1992 (the Valletta Convention) and the *UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001* (UNESCO 2001) are all relevant in this regard.

4.1.6. UNCLOS 1982 was ratified by the UK in 1997. Article 303 stipulates that 'states have the duty to protect objects of an archaeological and historical nature found at sea and shall co-operate for this purpose'. Article 303 also provides for coastal states to exert a degree of control over the archaeological heritage to 24 nautical miles, though the UK has not introduced any measures to implement this right.

4.1.7. Maritime archaeological sites can also be protected through World Heritage status, and one area within the SEA 7 study area has been protected in this way. The group of islands that make up St Kilda lie some 40 miles west of Benbecula in the Outer Hebrides. It became a World Heritage Site in 1986 because of its natural heritage and in 2004 this was extended to include the surrounding marine environment. In July 2005 it received dual World Heritage Status in recognition of the islands cultural heritage, making it one of only 24 places in the world to do so (Scottish Executive 2005).

4.1.8. The islands are owned by the National Trust for Scotland which has also created formal Bylaws for St Kilda, which protect the natural and cultural heritage from interference. Similar protection to the maritime cultural heritage could be afforded to National Trust properties along the north coast of Northern Ireland, with the Causeway coast being a prime example.

4.2. NATIONAL

4.2.1. Maritime archaeological sites in the UK are not protected unless specific action has been taken to protect them. There are, however, two different acts under which wrecks that may be of archaeological interest may be designated, namely the *Protection of Wrecks Act 1973* (PWA 1973, which has two relevant sections), and the *Protection of Military Remains Act 1986* (PMRA 1986). Designation of wrecks is

also possible under a third act, the *Ancient Monuments and Archaeological Areas Act 1979* (AMAA 1979), which applies to England, Scotland and Wales, but not Northern Ireland which has its own equivalent legislation (see below).

4.2.2.   In addition, there are UK-wide provisions applying generally to people who find or take possession of wreck – including wreck of archaeological interest – under the *Merchant Shipping Act 1995* (MSA 1985).

4.2.3.   The Department for Culture, Media and Sport (DCMS) is in the process of considering changes to heritage protection. As part of this consideration, DCMS – in conjunction with the Welsh Assembly Government, the Scottish Executive, and the Department for the Environment, Northern Ireland – has published a consultation paper on changes to the system for protecting the marine historic environment (DCMS 2004).

4.2.4.   The consultation period closed in 2004 and the government published the following document as a response: *Protecting our Marine Historic Environment – Making the System Work Better Analysis of Responses* July 2005. The proposals in the consultation paper sought to provide:

- …a positive approach to managing the marine historic environment, which will be transparent, inclusive, effective and sustainable and central to social, environmental and economic agendas at a local as well as national level;
- …a legislative framework that protects the marine historic environment but enables appropriate management approaches to be applied and to evolve. (DCMS 2005).

4.2.5.   The Joint Nautical Archaeology Policy Committee (JNAPC) *Code of Practice for Seabed Developers* (JNAPC 1995) is a UK-wide code developed in conjunction with key industries. The JNAPC Code is voluntary but provides a framework that seabed developers can use in conducting their activities in an archaeologically sensitivity manner. The Code is currently being revised, with a draft currently available for review from the JNAPC via The Crown Estate. The final version of the code is expected shortly.

4.3.   PROTECTION OF WRECKS ACT 1973

4.3.1.   The PWA 1973 is a UK wide piece of legislation that enables the Secretary of State to protect wreck sites from unauthorised interference. The Act is divided into two broad categories: Section One and Section Two.

4.3.2.   Section One is used to protect wrecks that are considered to be of historic, archaeological or artistic importance.

4.3.3.   Under the Act it is an offence to carry out certain activities in a defined area surrounding the site, unless a licence for those activities has been obtained from the Government.

4.3.4.   Section One of the PWA 1973 is administered by EH in England, HS in Scotland, Cadw: Welsh Historic Monuments in Wales and the EHSNI in Northern Ireland (EHSNI).

4.3.5.   The relevant Secretary of State must consult appropriate advisors prior to designation, though it is possible to designate a wreck in an emergency without first seeking advice. Advice is provided by the heritage agencies and by the Advisory Committee on Historic Wreck Sites (ACHWS).

4.3.6.   There are currently a total of 59 sites protected under section one of the Act, with five wrecks located within the SEA 7 study area, see **Figure 2**.

4.3.7.   Section Two of the PWA 1973 provides protection for wrecks that are designated as dangerous due to their contents and is administered by the Maritime and Coastguard Agency (MCA) through the Receiver of Wreck (ROW).

4.3.8.   Section Two of the PWA 1973 is not used to designate sites because of their archaeological interest, but it is possible that a dangerous wreck designated under this section might also be of archaeological or historic interest. There is currently only two wrecks protected under this section and neither fall within the SEA 7 study area. It is highly likely however, given the sheer quantity of Naval and merchant vessels lost with the SEA 7 area during both World Wars that wrecks containing dangerous cargo will be relocated in the future.

4.4.   PROTECTION OF MILITARY REMAINS ACT 1986

4.4.1.   Under the PMRA 1986 the Ministry of Defence (MoD) has powers to protect vessels that were in military service when they were wrecked. The MoD can designate named vessels as Protected Places even if the position of the wreck is not known. In addition, the MoD can designate Controlled Sites around wrecks whose position is known. In the case of Protected Places, the vessel must have been lost after the 4th August 1914, whereas in the case of a wreck protected as Controlled Sites, no more than 200 years must have elapsed since loss (MOD 2001).

4.4.2.   Under the PMRA 1986 aircraft lost in military service are automatically regarded as Protected Places, and are therefore protected against unauthorised interference.

4.4.3.   In neither case is it necessary to demonstrate the presence of human remains. Diving is not prohibited at a Protected Place but it is an offence to tamper with, damage, move or remove sensitive remains. However, diving, salvage and excavation are all prohibited on Controlled Sites, although licences for restricted activities can be sought from the MOD. Additionally, it is an offence to carry out unauthorised excavations for the purpose of discovering whether any place in UK waters contains remains of a vessel which has crashed, sunk or been stranded while in military service.

4.4.4.   In November 2001 the MOD reported on a Public Consultation on the Military Maritime Graves and the PMRA 1986 (MOD 2001). The report recommended a rolling programme of identification and assessment of all vessels in military service

when lost against criteria that included historical significance, to inform subsequent designations of Protected Places.

4.4.5. With effect from 01 November 2006, 36 vessels are designated as Protected Places and twelve as Controlled Sites. Given the volume of naval and merchant shipping, aviation and U-Boat activity in the SEA 7 study area during both wars, the potential presence of vessels eligible for designation under the PMRA 1986 is high.

4.4.6. The possible application of the PMRA 1986 to merchant vessels sunk in wartime has been subject to scrutiny through judicial review in December 2005 of the case of the SS *Storra.* The judge's conclusion that, despite being a merchant vessel, the *Storaa* was in military service when lost was appealed by the MOD but upheld by a ruling in October 2006.

4.5.   ANCIENT MONUMENTS AND ARCHAEOLOGICAL AREAS ACT 1979

4.5.1. The main legislation concerning archaeological remains in the UK is the *Ancient Monuments and Archaeological Areas Act 1979*. This Act primarily deals with land sites but there is provision to designate sites of vessels in territorial waters as Scheduled Monuments.

4.5.2. Monuments are defined by the AMAA 1979 to include buildings, structures, works, caves, excavations, vehicles, vessels, aircraft or other movable structures. Monuments can only be scheduled if they are of national importance. Section 53 extends the AMAA 1979 to monuments situated in, on or under the seabed within UK territorial waters.

4.5.3. Once a monument has been scheduled, visiting or diving on the site is not necessarily restricted. It is, however, an offence to demolish, destroy, alter or repair the monument without prior authorisation, in the form of Scheduled Monument Consent.

4.5.4. There are currently no maritime Scheduled Monuments within the SEA 7 area. However, Scheduled Monuments in other UK waters illustrate the range of wreck sites that may be considered for designation:

- The Light Cruisers *Brummer*, *Dresden*, *Karlsruhe* and *Koln*, along with the Battleships *Konig, Kronprinz Wilhelm* and *Markgraf* of the German High Seas Flee. All scuttled at Scapa Flow, Orkney, on 21st June, 1919.

- The Kilspindie Hulks Nos.1-8. Examples of 19th to 20th century 'Fifie' sailing fishing vessels, Kilspindie, Aberlady Bay, Lothian.

- The *Louisa*, a 19th century seagoing merchant vessel, Grangetown, Cardiff. This vessel was first protected in 2001 and now forms part of the Cardiff land reclamation scheme.

4.6.   MERCHANT SHIPPING ACT 1995

4.6.1. The *Merchant Shipping Act 1995* (MSA 1995) is used to regulate the reporting and disposal of wreck – including wreck of archaeological interest – found or recovered

from UK waters, or found or recovered outside UK waters but brought within those waters. Within the context of the MSA 1995, wreck refers to flotsam, jetsam, derelict and lagan found in or on the shores of the sea or any tidal water. It includes ships, aircraft and hovercraft, parts of these, their cargo and equipment.

4.6.2. All wreck that is found or taken into possession must be notified to the Receiver of Wreck by the finder. The wreck is then delivered to the Receiver, or, more commonly, held by the finder to the order of the Receiver.

4.6.3. The ownership and disposal of wreck is decided according to procedures contained within the MSA 1995. Provision is made for original owners to come forward to claim their property. Ownership of unclaimed wreck from within territorial waters lies with the Crown or in a person to whom rights of wreck have previously been granted by the Crown.

4.6.4. The Receiver has a duty to ensure that finders who report their finds as required receive an appropriate salvage payment. In the case of material considered to be of historic or archaeological importance, a suitable museum is asked to buy the material at the current valuation and the finder receives the net proceeds of the sale as a salvage payment. If the right to, or the amount of salvage cannot be agreed, either between owner and finder or between competing salvors, the Receiver will hold the wreck until the matter is settled, either through amicable agreement or by court judgement.

4.7. AIRCRAFT

4.7.1. As discussed above, all aircraft lost while on active service is protected under the PMRA 1986 and are subject to the provision on reporting under the MSA 1995. In addition, English Heritage has produced an archaeological guidance note on *Military Aircraft Crash Sites* (English Heritage 2002). While this document was published by English Heritage it has relevance for the SEA 7 area given the amount of aircraft activity carried out in both World Wars on convoy protection and anti submarine warfare.

4.7.2. The document clarifies the legal protection afforded to aircraft remains in the following statement:

'All crashed British aircraft in the UK or its coastal waters are deemed Crown property, all Luftwaffe crash sites are considered captured property surrendered to the crown, and for US aircraft the MoD acts as the representative for the US government.'

4.7.3. The Royal Air Force (RAF) Central Casualty Section (CCS), based at RAF Innsworth, is responsible for a number of issues relating to aircraft crash sites. They respond to inquiry into historical records concerning RAF casualties and deal with proposed excavations/interference with aircraft wreck sites. Proposed excavations of or interference to military aircraft crash sites require a licence issued by the CCS. This licence will normally only be issued when the MoD can demonstrate that no

human remains or unexploded ordnance is located with the wreckage (www.raf.mod.uk/ptc/pmacasualty).

4.8. SCOTLAND

4.8.1. Historic Scotland (HS) carries the responsibilities of Scottish Ministers with regard to archaeological and built heritage matters, which extend offshore to the 12 mile territorial limit. There are three relevant pieces of legislation from which direct responsibilities arise: the *PWA 1973*, the *AMAA 197)* and the *Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997*.

4.8.2. HS policy regarding the management and protection of underwater archaeological remains is set out in the policy paper *Conserving the Underwater Heritage* (Historic Scotland 1999). The policies aim to fulfil four key objectives:

- Objective 1: Develop a protection regime which is effective in securing the long-term future of the most important underwater sites, including securing them against inadvertent or deliberate damage or destruction.

- Objective 2: Pursue the beneficial management of key underwater sites which are under threat of degradation or loss.

- Objective 3: Make or encourage others to make arrangements for recovering archaeological data, to the best possible standards, when sites cannot be saved.

- Objective 4: Encourage the publication of information about all of these activities, and where appropriate publish such material at its own hand.

4.8.3. There are a number of plans and polices in Scotland that can be linked with the SEA process. These include:

- National Planning Policy Guideline 5;

- National Planning Policy Guideline 13;

- Planning Advice Note PAN 42;

- Shoreline Management Plans;

- Shorewatch project.

4.8.4. The current Planning (Scotland) Bill, is going through the Scottish Parliamentary process at present, and is expected to extend planning powers out to the 12 mile limit, but only in respect of planning control of marine fish farms.

National Planning Policy Guideline 5

4.8.5. *NPPG 5: Archaeology and Planning* sets out policy on how archaeological remains and discoveries should be handled. The guidance is aimed at planning authorities in Scotland, and is also of direct relevance to developers, owners, statutory undertakers, government departments, conservation organisations and others whose actions have a direct physical impact upon the natural or built environment (Scottish Office 1994a).

National Planning Policy Guideline 13

4.8.6. *NPPG 13: Coastal Planning* deals with planning along the coast and sustainable development. This guidance is likewise aimed at planning authorities and it defines cultural heritage as a resource that must be considered in the planning stage.

Planning Advice Note 42

4.8.7. *Planning Advice Note: Archaeology - the Planning Process and Scheduled Monument Procedures (PAN 42)* gives more detailed advice on planning procedures and the separate controls over scheduled monuments (Scottish Office 1994b).

Shoreline Management Plans

4.8.8. Shoreline Management Plans provide a large scale assessment of coastal erosion process and presents a policy framework to reduce these risks to people and the developed, historic and natural environment in a sustainable manner. At present there is no statutory requirement for Scottish authorities to initiate Shoreline Management plans but some have chosen to do so on a voluntary basis. Currently a little over 20% of Scotland's Coastline is covered by Shoreline Management Plans.

4.9. NORTHERN IRELAND

4.9.1. The Environment and Heritage Service (Department of the Environment, Northern Ireland) (EHSNI) administers the *Protection of Wrecks Act 1973* in Northern Ireland's territorial waters.

4.9.2. In partnership with the University of Ulster at Coleraine, EHSNI has set up a Centre of Maritime Archaeology to carry out surveys of the coastal zone, foreshore and seabed and to train future maritime archaeologists.

Historic Monuments and Archaeological Objects (NI) Order 1995

4.9.3. The *Historic Monuments and Archaeological Objects (NI) Order 1995 (HMAO)* provides for the protection of all archaeological sites and objects including those on the foreshore and the seabed.

4.9.4. Article 38(1) states that a monument situated in, on or under the seabed within the seaward limits of territorial waters adjacent to Northern Ireland may be included in the schedule under Article 3(1). Article 38(5) grants powers conferred by Article 24 to conduct archaeological investigations in territorial waters.

4.9.5. Under Article 29(1) any person that has a detecting device in their possession in a protected place without the written consent of the Department shall be guilty of an offence and liable on summary conviction to a fine. Restrictions on searching for archaeological objects are provided under Article 41 of the Order.

4.9.6. Reporting of archaeological objects is also a legal requirement. Article 42(1) states that any person who finds an object shall, within 14 days of finding the object, report the circumstances of finding, nature of the object, the owner or occupier of the land on which it was found; and deposit the object with the relevant authority.

Planning Policy Statement 6

4.9.7.   Northern Ireland also uses planning law to regulate archaeology. Government policy on planning, archaeology and the built heritage is presented in *Planning Policy Statement 6* (DOE 1999). While the *Planning Order (NI) 1991* has application only to the low water mark, the principles of *Planning Policy Statement 6* can be extended to the seabed (Williams 2001).

5.   HISTORY OF MARITIME ACTIVITY IN THE SEA 7 AREA

5.1.   INTRODUCTION

5.1.1.   This section will present an overview of maritime activity in the SEA 7 study area. Discussion of maritime activity in early prehistory is primarily inferential and should be read in conjunction with the SEA 7 report on prehistoric and early historic archaeological remains (Wickham-Jones and Dawson 2006). In respect of later prehistoric, medieval, post-medieval and modern periods the discussion is based on a combination of archaeological and documentary evidence.

5.1.2.   This section also addresses the relationship between original activities, the loss or disposal of material relating to those activities, and the survival of such material as maritime archaeological remains. This discussion encompasses ships, wrecks, maritime infrastructure, and shipping-related debris.

5.1.3.   The SEA 7 area is characterised by the extremely rugged coastline of western Scotland, consisting of many headlands divided by sea lochs and islets, for example the Summer Isles in Loch Broom. The island chains of the Inner and Outer Hebrides are situated offshore, including numerous islands of different sizes like Mull, Colonsay, Jura, Islay, Lewis and Uist. The Outer Hebrides are separated from the mainland by a channel known as The Minch. The westernmost land within the area is the islet of Rockall, which lies 370km west of the Outer Hebrides in the open Atlantic Ocean. To the south, the SEA 7 area is bordered by a short stretch of the exposed north-east Irish coastline, with Rathlin Island situated directly offshore, just at the entry of the North Channel which separates the Irish Sea from the Atlantic Ocean.

5.2.   LOWER, MIDDLE AND EARLY UPPER PALAEOLITHIC (800,000 BP – 18,000 BP)

5.2.1.   The earliest human evidence in Europe comes from Spain and Italy and is c. 800,000 years old. The oldest evidence for human occupation in North West Europe has recently been discovered in East Anglia at Happisburgh and Pakefield, consisting of flint tools and cut animal bones at least 700,000 years old (Wymer and Robins 2005, 467).

5.2.2.   So far there has been no evidence for Lower, Middle or Early Upper Palaeolithic archaeological remains within the SEA 7 area, in the whole of Scotland and Northern Ireland. This lack of archaeological evidence is undoubtedly due to several periods of glaciations and cover by ice sheets in the study area.

5.2.3.   It can be assumed that there was no human occupation on the ice sheets, but human occupation may have been possible at their margins, even if only seasonally, and

during intervening milder periods (Wymer 1999, 18). Although it is possible that simple forms of watercraft like floats or hide-covered boats might have been used in earliest prehistory, no examples of Palaeolithic watercraft are known worldwide. The potential for the presence of maritime archaeological material within the SEA 7 area predating the last (Devensian) glacial maximum appears, therefore, to be diminishingly small.

5.3. LATE UPPER PALAEOLITHIC (18,000 BP–11,000 BP/9,000 BC)

5.3.1.   A detailed account of the complex history of sea level change in the SEA 7 area and its relation to human occupation is set out in the SEA 7 report on prehistoric and early historic archaeological remains (Wickham-Jones and Dawson 2006).

5.3.2.   During the last glacial maximum of the Devensian Stage at c. 22,000 BP much of the SEA 7 area would have been covered by ice. The first phase of human re-occupation of the British Isles following the Devensian glacial maximum began c. 12,500 BP. Maritime craft dating to this time might have ranged from simple hide-covered boats to log rafts (McGrail 1991; 2004, 172). The potential for hide-covered boats to survive from this period is low, but associated artefacts such as paddles and fishing gear may help to shed light on Late Upper Palaeolithic maritime activity, and log rafts could survive within sealed contexts.

5.3.3.   These early craft might have been capable of coastal journeys and fishing expeditions. One theory favours the possibility of crossing the Atlantic in Late Upper Palaeolithic times, around 16,000 BC, based on comparable tools of this period found in France and in America, and taking into account ethnological comparisons with Inuit sea journeys. However, the evidence for Late Upper Palaeolithic seafaring in the SEA 7 area remains conjectural.

5.4. MESOLITHIC (9,000 – 4,000 BC)

5.4.1.   The earliest archaeological evidence for human inhabitation in Scotland and in Ireland dates to the Mesolithic, and there is a range of inhabitation sites fringing the SEA 7 area that demonstrate the importance of the area to these early populations (see Wickham-Jones and Dawson 2006). As well as the rich resources of the coastal zone, the relative ease of waterborne transport is likely to have been a key factor in the early inhabitation of the SEA 7 area.

5.4.2.   Although no Mesolithic vessels have been discovered in the study area, their existence is attested by the presence of archaeological material on land that was already insular. Ireland was already an island by the time it became inhabited, so while sea levels were lower than present, the first inhabitants would still have had to cross a stretch of open water (Breen and Forsythe 2004, 27-28). Ireland would have been clearly visible from Britain, notably from south-west Scotland to east Ulster. In addition, the two regions display some artefactual parallels, albeit limited (Woodman 1978, 203-205). The initial crossings could have been achieved in a matter of hours in a small rowed or paddled craft. It is likely that voyages would only have taken place in the most favourable conditions, and were probably infrequent (Breen and Forsythe 2004, 28).

5.4.3. At a more local scale, recent investigations at Sand near Applecross showed that its inhabitants were part of a Mesolithic network that operated across the Inner Sound and from other areas. They obtained stone for their tools from Staffin on Skye, 10km to the west, and from the island of Rum, 30km to the south (www.historyscotland.com/features/firstsettlers.html). Staffin seems to have been visited and re-visited on many occasions to collect and work the nearby raw materials, baked mudstone and siliceous chalcedony. Though there are several sources of bloodstone, previous research has shown that knappable bloodstone could only be obtained from the island of Rum (www.oisf.org.uk/sfs/sfs_corr.htm).

5.4.4. Evidence for deep-sea fishing, i.e. deep-sea fish species, has been recovered from Oronsay and other Mesolithic sites in western Scotland, and possibly also from the Northern Irish site of Cushendun, Co. Antrim. Some European Mesolithic societies, such as the Ertebølle culture in Denmark present extensive evidence of marine fishing (Finlayson 1995, 262-263; Breen and Forsythe 2004, 30).

5.4.5. A detailed analysis of the growing stage of the ear-bones (otoliths) of the saithe (coley) found in shell middens on Oronsay showed that the middens were all occupied at different times during the year. This evidence raised the possibility that foragers from the mainland camped at intervals throughout the year for fishing expeditions, their choice of camp being conditioned by prevailing weather conditions (Cunliffe 2001, 124-125).

5.4.6. In summary, from 7,000 BC there is evidence for seafaring across channels such as the North Channel between Scotland and Ireland, and to offshore islands and within the archipelagos of the Western Isles. Theoretical studies suggest that, by this time, multiple hide boats could have been used at sea, with complex log rafts, bundle rafts and simple logboats inland. Logboats were very important economically and socially, and possibly in warfare, on the inland waters and sheltered archipelagos of Atlantic Europe, as for example in the area around the Inner and Outer Hebrides (McGrail 2004, 172).

5.4.7. Simple logboats have been excavated from the Mesolithic onwards. The oldest examples known are those from Pesse in the Netherlands of c. 7920-6470 BC and Noyen-sur-Seine, France, of c. 7190-6540 BC with slightly younger evidence from Denmark and Germany (Arnold 1995, 16-19). Dates earlier than these are hardly to be expected since before this time, neither sizeable trees nor the appropriate tools were available (McGrail 2004, 173).

5.4.8. The oldest Irish logboat, from Brookend townland on the shores of Lough Neagh in Co. Tyrone in Northern Ireland, is late Mesolithic with a radiocarbon date of 5490-5246 BC (Fry 2000, 116). The excavations at the early Mesolithic site of Mount Sandel produced axes with wear patterns consistent with being mounted transversely in the manner of an adze, a useful tool for shaping dugouts as confirmed by the adze marks on the Brookend boat (Breen and Forsythe 2004, 31). The earliest known British examples feature from the 4th millennium BC (Delgado 1997, 438), i.e. the early Neolithic period.

5.4.9. Ethnographic studies have shown that bark has been employed to cover boats and it has tentatively been suggested that the rolls of bark stored at the 8,000-year-old site

of Star Carr in England could have been used to create such vessels (Johnstone 1980, 17). The lakeside settlement produced a birch-wood paddle indicating that boats were in use; however, no evidence of any craft were found and it has been noted that by recent standards the size of the Starr Carr rolls would have been inadequate for boat-building (McGrail 1987, 34; Breen and Forsythe 2004, 30).

5.4.10. The evidence for deep-sea fishing that has been recovered from Mesolithic sites in western Scotland and possibly Northern Ireland implies that appropriate vessels would have been required to catch them. There is a proliferation of skin-working tools as opposed to wood working tools from these sites, suggesting the use of hide boats instead of logboats (Finlayson 1995, 262-263; Breen and Forsythe 2004, 30).

5.5. NEOLITHIC (4,000 – 2,500 BC)

5.5.1. Today we tend to see islands as backward places in comparison to the mainland. Nevertheless, in the Neolithic, this relationship appears to have been reversed. Recent research suggests that it was in the Western Isles where the new techniques and a settled lifestyle including farming and pottery were first fully embraced: On mainland sites there is generally no overlap of dates between Mesolithic and Neolithic occupation. In contrast, field walking on Islay, for example, found that over a third of the sites identified contained both Mesolithic and Neolithic finds (Noble 2003, 2).

5.5.2. The key to this is believed to be the position of these islands in the western seaways. Cereals and domesticated animals would need to have been brought from continental Europe by boat, and the major tidal streams of western Britain formed the main communication routes with continental Europe in prehistory. Apart from Islay, similar evidence has been found on the Isle of Man, on Arran, on the Orkney Islands, in Shetland and in Ireland, the 'largest of all the islands in the western seaways' (Noble 2003, 3).

5.5.3. Neolithic circular henge monuments built of standing stones are not only known from Stonehenge in England or Carnac in Brittany, but also from Calanais on Lewis, Outer Hebrides, and from the Orkneys (Cunliffe 2001, 186; www.members.aol.com/scothist/scot1.html). By 3,000 BC the Shetland Islands, some 40 nautical miles north-north-east of Orkney, had been settled. Turf was cut for building material and used as fuel on the Outer Hebrides (Mills et al. 2004, 886), and round bottom pottery bowls were in use in the Hebrides as well as in Orkne.

5.5.4. Extensive overseas contacts are also evidenced by similarities between Irish and Scottish Neolithic structures. For example, the north Irish Court Tombs and their south-west Scottish counterparts, the Clyde Tombs, are megalithic monuments which share a basic plan involving forecourts and sub-divided chambers and denoting a complex ritual which restricted and constrained access to the contents. They reflect a long-lasting ritual and spiritual impact between both communities (Waddell 1991/92, 31-32 fig. 2; Cunliffe 2001, 188 fig. 5.23).

5.5.5. Another indicator of maritime contacts is trade. For example, porcellanite was the most important raw material in axe production in Ireland, accounting for over half of the 20,000 known stone axes there (Cooney and Mandal 1995). It is located on only

two sites within the British Isles, on the slopes of Tievebulliagh Mountain in Co. Antrim and a short distance away at Brockley on Rathlin Island. Rough-out versions of the axes would have been made on site before being removed to another site for finishing to the final polished product. High status porcellanite axes have been found on Lewis, Uist, Skye, Mull, Jura, Islay and the Kintyre peninsula as well as throughout Scotland and England (Waddell 1991/92, 32-33 fig. 3; Breen and Forsythe 2004, 32), (**Figure 4**).

5.5.6.   By Neolithic times, complex logboats may have been used at sea and, possibly, simple plank boats inland. However, these theoretical conclusions are not yet supported by excavated boat remains: no prehistoric hide boats, log rafts, or bundle rafts of these periods have been discovered (McGrail 2004, 172). Like the Mesolithic era, the evidence is confined to logboats.

5.5.7.   The Neolithic logboat finds are significant, however, as examples appear in overtly marine locations for the first time. Northern Irish examples include, among others, two dugout boats from Ballylig in Larne Lough, Co. Antrim, found in peat overlain by marine mud and radiocarbon dated to c. 3500 BC. The fact that no navigable rivers exist in the vicinity confirms beyond doubt the use of logboats in a marine environment (Fry 2000, 24; Breen and Forsythe 2004, 33-34).

5.5.8.   More recently, a logboat buried in 2m of sand was recovered during pipeline construction work within 1km of the shore at Gormanstown, Co. Meath, in Ireland. Not only does this find demonstrate that offshore finds may be made, but initial inspection revealed that the boat may have been modified for offshore use by adding holes to the gunwales implying outrigger attachments (Brady 2002, 7; Breen and Forsythe 2004, 34), see **Figure 5**.

5.5.9.   The oldest logboat from Britain was found next to the river Colne at Old Parkbury in Hertfordshire in 1989 and dates to the 4th millennium BC, the early Neolithic period. The 5m long boat had been placed in a pit and contained the remains of a disarticulated human skeleton, probably a child, in a chest. The boat and its contents had been deliberately set on fire as part of a ritual burial (Delgado 1997, 438; www.hertsheritage.org.uk/transport/pkboat.htm).

5.5.10.   Logboats were probably used in the Mesolithic for fishing, fowling, possibly sealing, and as ferries on lakes and rivers and within sheltered archipelagos. During the Neolithic the transport of agricultural produce and of flint may have been added to their roles (McGrail 2004, 174). A 'fireplace' of clay on a bed of fine sand was found in several of the Danish examples. These are thought to have been associated with the night spearing of eels by the light of a flare (Andersen 1994).

5.6.   BRONZE AGE (2,500 – 700 BC)

5.6.1.   Logboats continue to exist during the Bronze Age, as shown by the earliest logboat of Scotland from Locharbriggs in Drumfriesshire, which dates to around 1,800 BC and the second-oldest Scottish logboat from the Tay estuary, dating to the later Bronze Age (Cunliffe 2001, 65; Denison 2002). One of the most impressive Irish logboats was found in a raised bog at Lurgan, Co. Galway, and dates to the late Bronze Age. It was more than 15m long and had fittings which may have been

outriggers, allowing the vessel to operate at sea (Robinson et al. 1999, 906-907; Breen and Forsythe 2004, 37).

5.6.2. There is a sliver of physical evidence for the use of skin boats from an early Bronze Age cemetery in Dalgety, Fife, in Scotland. One of the burials and a number of fish bones was recovered from what appeared to be a coracle, i.e. a light boat, oval in shape, formed of hide stretched on a framework of split and interwoven rods. The existence of a coracle in Dalgety was evidenced by the profile in excavation and a possible piece of hide (Watkins 1980; Breen and Forsythe 2004, 35).

5.6.3. For the first time, there is evidence of sewn-plank crafts, unique in Europe, from the Humber estuary at North Ferriby, dating to the early Bronze Age. In contrast to previous views, their sea-going capability has recently been shown by experimental research (Chapman and Chapman 2005, 45; Lillie 2005, 101, 107). This seems to be confirmed by a variant type found at Dover, Kent. An earlier discovery by divers nearby comprised a large number of continental bronzes dating to the same period, and the Dover boat suggested that such cross-Channel trade took place in such a large plank-built craft (Delgado 1997, 130-131; Marsden 1997, 24, 27). A late Bronze Age example of a sewn plank boat from the Atlantic coast was discovered in the Severn estuary at Caldicot (Bell et al. 2000).

5.6.4. Contacts across the North Channel are evidenced by the distribution of trade items, for example pottery of the Irish Bowl Tradition in northern and eastern Ireland and south-west Scotland, including findspots on Islay and Coll, between 2300 and 1800 BC. It has been noted that these bowls are concentrated along important trade routes, one of them being the western sea route up the southwest coast of Scotland (Waddell 1991/92, 33 fig. 4).

5.6.5. Concrete evidence for these sea-routes is given by a Bronze Age gold torc dating to c. 1200 BC, which was dredged up by fishermen south-west of the Shiant Isles in 1991. Similar torcs have been found elsewhere in the UK, but this is by far the northernmost findspot. The Shiant Islands lie between Skye and Lewis, and the torc may have got there by a wrecking incident or as a votive offering or as a loss from a ship. (www.innsegall.co.uk/guide/outliers/out_shiant.htm).

5.6.6. To date no Bronze Age vessels have been discovered within the SEA 7 area, but there is a potential of finding any boat remains, including sewn-plank boats, and ship-related cargo, debris or other items within the region.

5.7. **IRON AGE AND ROMAN (700 BC – 500 AD)**

5.7.1. The north-west of Britain, from the coasts of Galloway, through the Western Isles, to Caithness and Sutherland and on to the islands of Orkney and Shetland, was densely settled in the first millennium BC. This is evidenced by a multitude of 'brochs', circular towers built of stone with internal walls divided into compartments, and 'duns', drystone-walled enclosures of more irregular plan (Cunliffe 2001, 352-353 fig. 8.33).

5.7.2. The situation in Ireland in the first millennium BC is unclear. Large numbers of artefacts have been recovered, but usually without details of their contexts surviving.

From the study of this material it appears that Ireland was in contact with the north-west European network during this period. Stylistic comparisons can be made with contemporary developments in northern Britain, and some inspiration seems to have come directly from the continent (Cunliffe 2001, 359).

5.7.3. Unlike the preceding period, evidence for Iron Age seacraft is rare in the United Kingdom. A single plank from Ferriby has been dated to c. 775-700 or 530-375 BC, indicating a continuing plank-boat tradition (Chapman and Chapman 2005, 44). Indirect evidence is depicted on the coins of the native ruler Cunobelin and through descriptions by classical writers such as Avienus, Julius Caesar, Solinus and Tacitus. A mid 1st century AD iron anchor has been found at Bulbery in Dorset (Mc Grail 1998, 254; Delgado 1997, 440).

5.7.4. During the Iron Age a new type of ship construction was being developed in north-west Europe, known as the 'Romano-Celtic' type. The first example to be excavated in the British Isles was the Blackfriars boat excavated in London in 1962, consisting of the remains of a substantial seagoing trading vessel (Marsden 1994). Another example comes from the Severn estuary, the Barlands Farm boat (Lawer and Nayling 1993) which, although smaller than the Blackfriars boat, would still have been capable of coastal and sea voyages. The presence of such craft on the western seaboard of Britain indicates the capabilities of Iron Age mariners.

5.7.5. Following the Roman invasion of Britain in AD 43, a lively trade sprang up with Ireland. The extent of this is shown by the 'map' of Ptolemy, a series of latitude and longitude co-ordinates recorded in the 2nd century AD, including details which can only have come from the personal observation of sailors and traders. The archaeological evidence confirms that overseas contacts were maintained during the 1st and 2nd centuries, with most of the artefactual finds material occurring along the east and the north coast of Ireland, suggesting among others a route crossing the North Channel to south-west Scotland (Cunliffe 2001, 416).

5.7.6. Another explorer from the Mediterranean was the Massiliot Pytheas who travelled along the west coast of Britain about 330 BC, crossing the SEA 7 area and probably reaching Shetland. It is believed that he started his journey at Massilia using a Greek ship, but made use of local vessels as he proceeded (Cunliffe 2001, 306-307 fig. 7.33).

5.7.7. By contrast, the Lough Lene boat, which was discovered in 1968 in Co. Westmeath, is a small vessel constructed in Mediterranean technique (carvel construction fastened with mortise and tenon joints). It is an extremely rare example of such a vessel being found outside the Mediterranean, and is the only one of its kind to be found within Ireland and one of less than ten so far discovered within north-western Europe (Farrell 1989). While this craft was clearly from a lacustrine setting it does demonstrate the extent of overseas contact and exchange of maritime technologies.

5.7.8. Material from Iron Age contexts also indicates the form that hide covered boats may have taken. A hoard of gold objects recovered close to the Study Area from Broighter, Co. Derry in 1896 contained a small model of a boat, of a type thought to have been in use around the last century BC (Raftery 2000). While there have been a number of theories as to the form the model is trying to represent, it is generally

considered to depict a hide covered vessel and as such is the earliest example of such a craft within Ireland (Breen and Forsythe 2004, 40-41). This model, depicting a vessel with a mast and sail, 18 oarsmen, and a substantial carrying capacity, would have been suitable for travel and trade across the Irish Sea or the North Channel, and possibly even further (Raftery 2000).

5.7.9.   A Roman anchor stock of the 2nd or 3rd century BC from off Porth Felen, Gwynedd, in Wales (Cunliffe 2001, 421 fig. 9.39), pottery and amphoras trawled up from a number of locations, and an Iron Age bronze sword from Gaul recovered from Ballyshannon harbour, Co. Donegal, in north-east Ireland are other indicators of the extensive Roman naval and merchant shipping activity around the coast during more than four hundred years (Breen and Forsythe 2004, 40; Delgado 1997, 440). However, the Scottish and Irish coastlines adjoining the SEA 7 area were never occupied by Roman troops.

5.7.10. The limit of Roman expansion within Britain ended at the Antonine Wall. It was built in 142 AD and named after the Roman Emperor Antonine Pius who ordered its construction. It ran from the Old Kilpatrick on the Clyde to Bo'ness on the Forth and had a number of forts built along its length. The Roman fort at Whitemoss farm, Bishopton on the south shore of the Clyde estuary stood at the western most extent of the Antonine Wall and would have been supplied by sea.

5.7.11. The Scots, originally from Ireland, seem to have become allies of the Picts from Scotland at an early stage, and the seaborne attacks mounted on the Roman province to the south in the 4th century caused havoc and led to changes in Roman strategy. By the 5th century, a large number of Irish had crossed to Scotland and established themselves in the Western Isles and the Argyll area, where they established their new kingdom of Dalriada (Cunliffe 2001, 441; Innes 1993, 1).

5.7.12. Celtic seafarers undertook overseas voyages out of sight of land, probably from the 6th century BC and certainly from the 1st century BC (McGrail 2004, 222). Hence, there is a potential of finding vessels of many different types from this period within the SEA 7 area, including logboats and hide boats as well as advanced types like sewn-plank boats of different building traditions, and ship-related items.

5.8.   EARLY MEDIEVAL (500 – 1177 AD)

5.8.1.   Around 500 AD the Scots came en masse to settle along the Argyll coast and on the Western Isles. From this point forward, historians distinguish Irish from Scots, although the two peoples continued to associate, marry, trade and feud for much longer. Dalriada's strength was her naval power as her inhabitants were linked only by sea. The 'Annals of the Four Masters' refer to what appears to be an assembled fleet of the Dalriada travelling to Coll and Islay in 564 AD. By the 8th century, its navy was able to engage in fleet actions in open sea (Breen and Forsythe 2004, 51; www.members.aol.com/scothist/scot3.html).

5.8.2.   Their ships would have included large hide-covered currachs, i.e. sea-going boats of leather and wicker with wooden frames. The construction and design of currachs is unique to Ireland and the west coasts of Scotland. They relied mostly on human power – oars – for propulsion, but often did have a single sail. A paddle of this

period was discovered at a crannog site in Loch Glashan, c. 12km east of the Sound of Jura. (www.members.aol.com/scothist/scot3.html).

5.8.3.   Scarce finds of 5th and 6th century Mediterranean pottery in Ireland and western Scotland may have resulted from singular voyages of Byzantine vessels or by redistribution through local shipping networks. In the 7th and 8th centuries, the bulk of cargoes transported in western French pottery vessels now went to the south and east coasts of Ireland and the west coasts of Scotland. According to Cunliffe (2001, 481), they were carried by 'the Gaulish sailors in their barcae' who are mentioned in historic sources. They may have contained a cargo of wine and western Gaulish relishes.

5.8.4.   Apart from migration, war and trade, Christian missionary activity was another cause for seafaring in the region. The most known Scottish missionary was St Columba, who sailed from Northern Ireland to the island of Iona in 563. The foundation of monastic communities was a major achievement for the church, and Iona in particular was the base for the setting up of these monasteries, for example at Applecross on the mainland and on the islands of Rum and Eigg from early in the 7th century, if not earlier (Innes 1993, 5; Cunliffe 2001, 475).

5.8.5.   While exploring the Western Isles, a group of Scottish settlers came across the settlement of Udal on North Uist, which had been inhabited since Neolithic times, and constructed their homes in a figure of eight or ventral style. These ventral houses were continually occupied from around 300 AD to the coming of the Vikings.

5.8.6.   Around 800 AD Norse longships approached through the sound of Harris and destroyed the settlement. In its place they erected a polygonal fort and houses at the site and began manufacturing in metals and bone, resulting in the most important Hebridean Viking settlement (Innes 1993, 5; Graham-Campbell 2001, 71; www.archaeology.co.uk/ca/hilites/hebrides/Udal.htm).

5.8.7.   Place name evidence points to Scandinavian settlement on Shetland and the Orkneys in the early 8th century, well before the attack on Lindisfarne in 793 AD, which is generally recognised as the opening of the Viking age. The Viking name for the Hebrides is 'Suderøyaer', and heathen Viking graves have been found in Scotland, on the Isle of Man and across the Western Isles (Christensen 1989, 15; Cunliffe 2001, 497 fig. 11.10; 500-502).

5.8.8.   The outermost example is St Kilda, where a female grave with a pair of oval brooches was discovered, which may well indicate a Viking settlement (Christensen 1989, 15). This assumption is underlined by the fact that the place name of Soay on St Kilda derives from the Old Norse 'so-øy', meaning 'sheep island'. The feral Soay sheep is the most primitive domesticated animal in Europe and has been preserved unchanged since Neolithic times (en.wikipedia.org/wiki/Soay%2C_st._Kilda).

5.8.9.   From the Hebridean island of Eigg comes a bog find that gives clear evidence of Norse maritime activity. In the bog, two unfinished stepped stems of oak for a fairly large boat or small ship were found. The size indicates that they were intended for the same boat, even though one is only roughed out, while the other is nearly finished. Similarly stepped stems were in use from c. 900 to the 14th century, but the

closest parallel to the finished stem of Eigg is the clinker-built Danish wreck Skuldelev 3, dated to c. 1000 AD (Christensen 1989, 17).

5.8.10. The Vikings are famous for their large, wooden, clinker-built ships, but similar vessels are known to have been used in the 7th century Saxon kingdoms of England before the coming of the Vikings, as shown by the excavations in Sutton Hoo (Greene 1988). The custom of storing oak keels and stems in an unfinished state in bogs or lakes is well attested by west Norwegian finds from the Viking and early medieval periods (Christensen 1989, 17).

5.8.11. Taken together, the sources clearly point to the coastal regions of the SEA 7 area, including the North Channel, as being an important part of what can be called Viking waters, in the period 800 to 1000 AD. However, Viking shipping routes were by no means constrained to these coastal strips, but crossed the open sea. Parts of the SEA 7 area would have been traversed when sailing from the Shetland Islands to Cape Farewell at the southern tip of Greenland, for example (Graham-Campbell 2001, 66-67).

5.8.12. The most commonly mentioned vessel in the early Irish law texts, which date from the seventh to the ninth centuries AD, is the small, wickerwork boat covered with an animal hide called coracle, but larger (triple hide-covered) boats, ferryboats and sea-going wooden ships are also mentioned, both with oars and/or sails. Overseas trade and transports are described in the lives of the Saints. Deep-sea fishing also took place during the period as evidenced by bones of deep-water species found on excavations (Breen and Forsythe 2004, 45-47).

5.8.13. The missionary St Brendan (c. 484 – c. 578 AD) is believed to have travelled in a large, sea-going currach-like craft. In 1976, an experimental transatlantic voyage in a small currach-style vessel was undertaken by Tim Severin, who sailed from Kerry to Newfoundland via the Hebrides, the Faroe Islands and Iceland. The expedition proved that early skin-boat technology was well capable of withstanding such a journey (Severin 1977, 774; Breen and Forsythe 2004, 51).

5.8.14. Other possible evidence for maritime activity within the Irish part of the SEA 7 area is given by a reference to a pilot, living on either Rathlin Island off Co. Antrim or Lambay Island off Co. Dublin, who was presumably employed to guide boats safely to shore (Reeves 1988, 103). A later reference from 795 AD records the 'burning of Rechru by the pagans'. Rechru probably was a monastic foundation, again on either Rathlin or Lambay Island. This event marked the first in a series of raids which were subsequently carried out all over Ireland by Viking marauders (Breen and Forsythe 2004, 48, 54-55).

5.8.15. For four decades, following the first raids of the late 8th century, the coasts of Ireland were subjected to an increasing number of hit-and-run attacks by highly mobile maritime war parties sailing from their homelands on the Northern and Western Isles of Scotland. For example, the Irish annals record 26 Viking attacks for the period between 795 and 820 AD. After 830 AD, the Vikings established winter camps along the coast, and the number of sedentary Viking communities increased around them. As a result, the northern Irish Sea became a significant commercial focus (Cunliffe 2001, 505-506).

5.8.16. The Viking centre in Ireland was Dublin. Maritime activity there and in other towns is attested by numerous ship timbers used in secondary contexts, by ship graffiti and boat models (McGrail 1993). There are numerous other Viking finds from Ireland, both graves and stray finds. Among them are a group of swords and axes from various rivers, another possible indication of battles where the Vikings came by boat (Christensen 1989, 16). To date no complete Viking ship has been found in the SEA 7 area.

5.8.17. However, the annals do record the loss of a number of Viking ships. In 919 AD the 'Annals of the Four Masters' refer to a fleet of 32 Viking vessels arriving in Lough Foyle – obviously crossing the SEA 7 area – where they met with 'straits and rocks'. They proceeded to plunder Inishowen before being repelled by one of the local Irish lords, who captured and killed the crew of one of the vessels before destroying their ship (Breen and Forsythe 2004, 57-58).

5.8.18. Two possible Viking boat-burials are recorded within or close to the SEA 7 area. One was found in 1820 at Ballywin bog near Portrush in Co. Antrim. Even though different accounts exist regarding which parts of the vessel were actually preserved, they all agree that a number of silver coins was found with the craft. The ship was undoubtedly a sea-going vessel and the original interpretation that it was a boat-burial is probably accurate (Briggs 1974, 158). The other possible boat-burial was uncovered in the early 19th century on Rathlin Island. Timbers from a Viking-type boat were found in a field which had produced other burials of Viking character (EHS SMR 001:080).

5.8.19. The Viking dominance in the area prevailed up until the early 12th century. One of the latest pieces of evidences is a unique chess set consisting of 78 chessmen carved from Walrus ivory and dating to the 12th century. It was found in a small stone-built cairn or chamber on a remote beach at Uig on the Isle of Lewis in 1831, and demonstrates once more that the SEA 7 area was an important part of the extensive trade routes that the Vikings developed (www.virtualhebrides.com/isle-of-lewis-chess-set.htm).

5.8.20. Logboats continue to be used throughout this period. Most examples have been recovered from lakes and rivers, but the possibility of uncovering this type of craft from a maritime context remains. Logboats found in Armagh and Tyrone, Northern Ireland, have yielded dendrochronological dates of 492 AD and 431 AD respectively while a boat from Galway was dated to 1001 AD, clearly illustrating the survivability and usefulness of this type of craft (Lanting and Brindley 1996).

5.8.21. Viking maritime supremacy terminated in the area in 1170, when Norman forces from Britain crossed the Irish Sea in ships of roughly the same type as that used by the Scandinavians. Although the Viking kingdom in Dublin came to an end, Scandinavian influence and interests in the area did not disappear completely. The Western Isles were not incorporated into feudal Scotland before the 13th century, with Lewis remaining in Norwegian hands until 1266 (Cunliffe 2001, 526). The bishopric of Suderøyaer (= Hebrides) and Man was under the archbishop of Trondheim from 1153 to 1536 (Christensen 1989, 17).

5.9. MEDIEVAL (1170 – 1600 AD)

5.9.1. The Western Isles of Scotland may not seem a centre of international shipping today, but locally the busy waterways between islands and mainland have always been a lifeline which has seen colonies established, goods traded, cattle transported, land rents collected, religion spread and gatherings organised. Earlier in its history, ships of many nationalities would sail through the area. Its strategic role is illustrated by the many great medieval castles, built to protect the waters from rival clans and invading forces (Barrell 2000).

5.9.2. The crossing of the North Channel continued to be a dangerous undertaking, as shown by the example of the wine ship which left Dublin in November 1307 bound for Scotland. This vessel was blown around the northern Irish Sea until 'about the feast of Epiphany' (6 January), by which time, as recorded in the 'Calendar of the justiciary rolls of Ireland', the wines were gone bad (O'Neill 1989, 28).

5.9.3. Apart from the wind and waves the major hazard for shipping in and around the study area throughout the 13th, 14th and 15th centuries was the presence of pirates and rovers. For example, in 1258 a Hebridean fleet plundered a merchant ship of her cargo of wine, copper, cloth and iron off the Galway coast. The pirates were later pursued by the Sheriff of Connacht, Jordan d'Exter, and a fleet of local vessels (Breen and Forsythe 2004, 77).

5.9.4. Even after the Scottish wars of Edmund I and Edmund II the Scots continued to menace merchant shipping. Between 1307 and the decisive battle of Bannockburn in 1314, the Scots increased their naval strength. The sea between the Isle of Man, Ireland and the North Channel was described in 1322 as being infested with the 'enemies' of the King who were 'intent on plundering merchant ships' (Breen and Forsythe 2004, 77).

5.9.5. To a large extent the Scottish pirates were looking for food supplies, and ransoms for captured ships were frequently paid in the form of victuals. An example is the case of John of Lyons. Around 1345 he was returning from a trading voyage to Connacht in western Ireland and was driven by a storm to the Scottish coast where his ship was captured by rebels. When hostages were taken, John and his ship were sent to Drogheda to bring back food supplies by way of ransom. Similar demands were made when English ships were taken (O'Neill 1989, 31).

5.9.6. In 1442 Drogheda petitioned for money to repair its walls, complaining that, among others, Scottish rebels daily frequented the coast of Ireland destroying ships and merchants. The citizens of Waterford complained in the same year of attacks by enemies including Scots (O'Neill 1989, 32). Even though little is known about Irish and Scottish late medieval coasting trades, Scottish pedlars were said to take advantage in the north-east coast of Ireland 'of such creeks unguarded and swarm about the country in great numbers' (Woodward 1989, 35).

5.9.7. Trading networks expanded across Europe in the 12th century as agricultural output increased. Important trading confederations such as the Hanseatic League emerged in the 13th century and this in turns led to a huge increase in merchant shipping in northern Europe. The increase in trade had a bearing on the development of ships – larger merchant vessels like cogs, hulcs (reverse clinker built vessels) and keels were

needed to accommodate bigger cargoes. In addition, the military function of ships became more obvious with the addition of fore- and after-castles to the larger vessels during the 12th century (Breen and Forsythe 2004, 72-75).

5.9.8.   In the early 15th century the carvel technique became the more common building method employed on larger craft throughout Europe, while the clinker technique continued to be used on smaller vessels. The introduction of the carvel technique, probably from the Mediterranean region, meant that shipwrights could build larger vessels which were more economical and structurally sound, like carracks, galleons and balingers (Breen and Forsythe 2004, 82-84). The use of these vessels within the SEA 7 area is demonstrated by a depiction of a galley at sea between Antrim and Kintyre on a map by Francis Jobson dating to about 1590 (Hayes-McCoy 1949-53, 158, 164).

5.9.9.   The island lords of western Scotland had a major influence on the society and economy of regions like north Antrim and there was regular traffic between the two areas. The vessels taking part in this interchange would have varied greatly from warships to large cargo carriers and humble fishing boats (Breen and Forsythe 2004, 88). However, the Viking heritage was still evident in the boat-building tradition, resulting in Scandinavian-style highland galleys built in clinker construction and with double-ended form. Local modifications comprised stern-mounted rudders. These vessels were the common feature of north-coast traffic into the 16th and even 17th centuries, even though they fell out of favour in England in the 14th century (Rixson 1998 200).

5.9.10. These highland galleys are depicted on Scottish funerary monuments and were probably the elite vessels among the coastal fleets. They were reliable sea-going vessels and were well-suited to the Gaelic mode of combat and raiding. They were capable of high speed over short distances (6-7 knots) and their shallow draught allowed them to penetrate estuaries and approach beaches with no formal landing facilities (Breen and Forsythe 2004, 88). They were for example used in the 'Battle of Bloody Bay', Isle of Skye, in the 1480s, where approximately a dozen boats of this type were involved (Rixson 1998, 76).

5.9.11. An example of such a highland galley is carved on the tomb of Alexander MacLeod at Rodel on Harris, dating to 1528. In a Crown charter dated 1498, the MacLeods were granted estates in Skye and Harris and they were required to keep a number of ships in the service of the King, one of 26 oars and two of 16 oars apiece. The ship shown on the tomb is clearly of the highland galley type and it is paralleled on other tombs in western Scotland in the late medieval period (Steer and Bannerman 1977, 180-182; Christensen 1989, 18).

5.9.12. The galley depicted in a post-1584 graffiti at Dunluce castle in north-east Ireland illustrates a similar vessel (Farrell 1978). The castle is sited in a commanding position on a promontory overlooking much of the north coast and across to Scotland. This seaboard enjoyed close links with the Scottish lords of the Isles through the powerful McDonnell family, who occupied a number of coastal fortifications, including Dunluce. The similarity between the depiction of this craft and those from contemporary Scottish tombs reinforces historical accounts of the

strong links between these two regions during the medieval period (Breen and Forsythe 2004, 89).

5.9.13. In May 1588, a large armada consisting of 130 ships left Lisbon bound for England. The Armada arrived in the English Channel in late July and was scattered up into the North Sea (by the English fleet). The Armada was ordered home, but rather than risking going back via the Channel the fleet instead chose to round Scotland, and return home via the west coast of Ireland. On this passage the Armada had to contend with violent gales combined with freezing frog and unfamiliar coastlines. Many of the ships had suffered during the week-long conflict and were storm damaged. About 35 ships were lost on the return voyage on the Atlantic coasts of Scotland and Ireland (Breen and Forsythe 2004, 95-96).

5.9.14. At least four ships were wrecked off the north Irish coast, including the *Castillo Negro*, *La Barca de Amburg*, *La Trinidad Valencera* and *La Girona*. The latter is situated directly within the SEA 7 area, as is the *San Juan de Sicilia* off the Scottish west coast. *El Gran Grifón* was wrecked further north on Fair Isle, between Orkney and Shetland. The routes of most Armada ships crossed the SEA 7 area either east or west of Rockall Island or on either side of the Western Isles (Martin 1975, 10 fig. 1; Muckelroy 1980, 92), and there is a high potential of many more Armada ships being wrecked in the area. The wreck site of *La Girona* is depicted in **Plate 1** and the survivors received shelter and aid at Dunluce Castle, **Plate 2**.

5.9.15. By way of example, the name 'Poll nan Crann' at Benbecula, between North and South Uist on the Outer Hebrides, means 'Pool of the Masts', reputedly from a ship of the Spanish Armada which was wrecked there (www.wildlifehebrides.com/map/benbecula/). Furthermore, local oral tradition claims that another Armada ship was wrecked off Islay in the Mull of Oa (www.clanhay.net/CASTLES/OldSlains.php; Martin and Parker 1988, map), and the wild goats on Colonsay are reputedly the descendants of Spanish goats carried on another Armada vessel shipwrecked there (www.colonsay.org.uk/intro.html).

5.9.16. A number of Armada wrecks have been excavated in Irish and Scottish waters and they have proved to be of enormous importance, as they provide a unique insight into technology and society of late 16th century Europe (Martin 1989; Breen and Forsythe 2004, 100-104):

- *La Girona* was a Neapolitan galleass that sank during a gale in October 1588 at Lacada Point near the Giant's Causeway on the north Antrim coast. The vessel went down with the loss of almost 1,300 lives, among which were men from the noblest families in Spain. The wrecking of the *Girona* was the greatest single disaster in the whole Armada event. The site was excavated in 1967-68. Given the dynamic environment of the site, there is no remaining hull structure, but many precious finds were and still are contained in concretions on the seabed. These are released from time to time during storms' (www.ulstermuseum.org.uk/collections/archaeology_and_world_cultures/armada/Gold_of_the_Girona/). A brief history of the site is contained in **Appendix 1;**

- 'The *San Juan de Sicilia* was a large merchant ship which blew up and sank in Tobermory Bay on the west of Scotland. Encapsulated in the soft mud of this sheltered anchorage the ship might have been preserved almost indefinitely. But for almost four centuries enterprising salvors have sought her supposed monetary treasure without success, and in the process have demolished an archaeological treasure which, had it remained undisturbed, might have rivalled the 17th century Swedish warship *Vasa* or Henry VIII's *Mary Rose*. Only a few dispersed items recovered from the *San Juan* can now be traced' (Martin 2002).

5.9.17. The Nine Years War in the 1590s was a conflict which again brought Spanish vessels to Irish shores in order to aid the Irish lords fighting against English rule. The Crown had attempted to isolate Irish strongholds and blockade the seas in order to stop supplies reaching them, particularly from Scotland. This blockade was continually broken by numerous Scottish vessels, which arrived on the northern coast week after week with supplies (Breen and Forsythe 2004, 104).

5.9.18. For example, early in 1594, at the beginning of the war, Byran McArt led an expedition into Dufferin, Co. Down and burned twelve towns. He subsequently took the castle at Ringhaddy as his personal residence and went about garrisoning it. McArt had extensive trading contacts with Scotland, and a letter in the Calendar of State papers refers to Scottish barques (sailing vessels) 'sometimes twenty in a week', loaded with provisions 'lying at road [at anchor] under the castle wall' (CSPI 1601-3, 502).

5.9.19. Apart from the vessels described above, hide-covered boats like currachs and coracles as well as wooden rafts and logboats continued to be used throughout Ireland and probably also Scotland during this period, as evidenced by written sources as well as depictions on maps (Breen and Forsythe 2004, 106-108). Their usage was predominantly constrained to inland waters, but included estuaries and may have extended towards coastal routes.

5.10. POST-MEDIEVAL (1600 – 1800 AD)

5.10.1. The 1588 Spanish Armada was at first suggested as the most obvious historical context for a wreck discovered in 1998 off Kinlochbervie in north-west Scotland. Subsequent investigations recorded the largest collection of Italian renaissance pottery ever discovered from an archaeological context in Scotland, and the largest group of grotesque maiolica ever recovered from an archaeological site in Britain. However, closer analysis did not support an Armada attribution, because the majolica pottery and the cannons suggest a date range between 1590 and 1625 (Robertson 2004, 14, 26). The site is designated as a historic wreck under the *PWA 1973*.

5.10.2. The presence of the remains of a vessel such as those found at Kinlochbervie at the northernmost tip of Scotland illustrates the extent of Spanish maritime activity in northern Europe. This extent is also evidenced by a historic report on a Spanish merchant ship which was bound for the New World, but 'ran on the rocks' off Rockall (in the westernmost part of the SEA 7 area) in 1686 with the loss of 250

lives (www.en.wikipedia.org/wiki/Rockall). This example also illustrates that maritime activity, including loss of vessels, was not constrained to coastal routes, even though due to the circumstances of discovery more incidents are known in inshore waters.

5.10.3. The great innovations of the post-medieval period in ship design were stimulated by large-scale mercantile businesses carrying goods from around the world to Europe. Several incorporated companies were founded in Europe at the beginning of the 17th century for the exploitation of trade with the countries on the fringe of the Indian Ocean. These were known as the East India Companies, and the most successful were the Dutch East India Company (Verenigde Oostindische Compagnie or VOC) from 1602 until c. 1800 and the English East India Company from 1600 until 1858 respectively (Breen and Forsythe 2004, 110).

5.10.4. The vessels of the VOC regularly crossed the SEA 7 area. Preference for this longer route from the North Sea to southern Europe over the English Channel stemmed from safety. The Channel proved in the past to be a perilous place. Being narrow, it was fairly easy to control and was the main arena for skirmishes between the French, Dutch and English. Any unwanted intruder or richly laden merchant ship was an easy target for the French or English navies. Travelling instead round Scotland and down the western side of Britain, the Western Isles made the perfect stopping off point for supplies and trade (Muckelroy 1980, 120).

5.10.5. Three VOC wrecks have been located off Shetland and one within the SEA 7 area off Barra on the Outer Hebrides. No doubt there are many more VOC wrecks beneath the seas in the area. Off Barra, the 240 tons Dutch ship named *Adelaar* ('Eagle') was lost in 1728 and found in 1972. Discoveries included lead ingots, bricks and armament, as well as pipes, coins, domestic utensils and tools, even though substantial material had probably been salvaged soon after the disaster and the site itself was heavily exposed to the action of the waves (Muckelroy 1980, 121, 127, Martin 2005, 179).

5.10.6. The English Civil War also saw fierce fighting in the SEA 7 area. Many of the Scottish clans supported the Royalist cause and Cromwell sent a number of ships up to the Western Isles to quell dissent and Royalist uprisings. Many of these small battles centred on the clans' strongholds around the Sound of Mull. For example, according to historic sources three Cromwellian vessels named *Martha and Margaret*, *Speedwell* and *Swan*, were lost in 1653 off Duart Castle. In 1979, a wreck believed to be that of the *Swan* was discovered. Investigations since 1991 revealed substantial elements of the articulated hull structure, wooden carvings and many artefacts. The site is designated as a historic wreck under the *PWA 1973*. (Delgado 1997, 134; Martin 1998), and is illustrated in **Plate 3**. A brief history of the site is contained in **Appendix 1.**

5.10.7. The Mingary Castle wreck site off Ardnamurchan in the Sound of Mull was discovered in 1999. Without any surviving timber, the investigation focused on the scatter of artefacts on the site. Five cast iron cannon were dated to 1640-1670 and were different to the ship's own arsenal, and so are thought to be part of a cargo intended for land battle. A prisoner held in Mingary Castle in 1644 mentions a siege of the castle and he actually saw the wrecking of the ship, a Parliamentarian Dutch

ship, and this refernce may relate to the remains found ion the site (www.channel4.com/science/microsites/W/wreck_detectives_2003/the_wrecks/mingary_castle_wreck/history.html). The site is designated as a historic wreck under the *PWA 1973.* A brief history of the site is contained in **Appendix 1.**

5.10.8. Another designated historicwreck in the SEA 7 area is the wreck of *HMS Dartmouth*, a small fifth rate frigate built in 1655 (see **Appendix 1**). On 9 October 1690, on a mission to the Sound of Mull to persuade the MacLeans of Duart to sign the Articles of Allegiance to William and Mary – by force if necessary – a storm drove her from anchorage and ashore on rocky islands. She was discovered in 1973 and excavated subsequently, revealing so far unknown details of the construction of a vessel of this type as well as cannons and a large and varied collection of small finds (Muckelroy 1980, 29, 100-101; Delgado 1997, 121-122). A brief history of the site is contained in **Appendix 1.**

5.10.9. The French often allied themselves with Scotland against England and the Western Isles were used as a base for their activities. The French employed a number of so-called privateers. These were privately owned vessels, which were commissioned by their states to prey mainly on the commercial fleets of the enemy, i.e. licensed pirate ships. The *Amazon*, on the other hand, is an example for a British privateer, fitted out in the Bangor area of Co. Down. It was engaged in repelling the enemies of the King off the coast of Down and Antrim and was finally wrecked in 1780 at Ballyholme, Co. Down. All her crew were lost (Breen and Forsythe 2004, 118-119).

5.10.10. Smuggling activities soared in the 18th century and around the turn of the 19th century. A number of commodities such as tobacco, spirits, tea and silks were highly sought after and highly taxed. The Irish Sea area was very important in this business, as it was bounded by rich and bustling seaports and involved the separate jurisdictions of Ireland and Scotland, divided by the narrow North Channel (Cullen 1989, 85). Many small, lightly armed coastal traders were involved in this illicit trade. Most were active on the less well-known stretches of coast and operated at night. This type of activity carried inherent risks and many vessels were wrecked while attempting a landfall (Breen and Forsythe 2004, 125).

5.10.11. For example, the similarity between the Mull of Oa, at the southern end of Islay, and the Mull of Kintyre, has been the direct cause of dozens of shipwrecks, despite the fact they are 30 miles apart. Islay lies on the north-east side of the North Channel, leading to the Firth of Clyde and the Irish Sea. To mistake these two headlands would be fatal, particularly in the days of sail (Larn and Larn 1998, 38).

5.10.12. Throughout the 18th century the stream of Irish emigrants from Ulster across the Atlantic was continuous, albeit changing in quantity. The famine of 1740-1741 gave a sharp impetus to the renewal of emigration, which rose steadily through the 1760s, when more than 20,000 people left from the Ulster ports of Newry, Portrush, Belfast, and Larne. The migration reached a climax in the years 1770 to 1774, when at least 30,000 people departed. Over the course of the whole century, it is estimated that more than 400,000 emigrated from Ulster, the vast majority to North America, passing through the SEA 7 area (www.scripts.ireland.com/ancestor/magazine/emigration/ulster.htm).

5.10.13. The number of records of shipping losses starts to increase considerably from the second half of the 18th century onwards. The number of records may have been increased but not necessarily because there were more shipwrecks, but more likely as a direct result of a more rigid and formalised reporting regime. The principle records of wreck began to be kept by the Lloyd's Register Society in 1760 which were first published in 1764 as Lloyd's Register of Ships (Larn and Larn 1998, Sections 6-7).

5.10.14. The currachs remained one of the most enduring vernacular boat types in post-medieval Ireland. An account book from Rathlin Island off Co. Antrim, dating to the second half of the 18th century, records the payment of 1s 6d for one mare's hide for a boat (Evans 1989, 238). References to this boat-type continue into the 19th century and indeed until the vessels emerge in their contemporary form (Breen and Forsythe 2004, 116).

5.10.15. Logboats are another long-term survival. Of the 67 dated logboats in Ireland, 30 are less than 1,000 years old and 18 are less than 500 years old (Lanting and Brindley 1996, 91). In the mid-17th century the natural historian Gerard Boate remarked that logboats were very common throughout Ireland and were used on rivers and lakes (Boate 1726, 37). Examples include Derrygalley 2 and the Moy boat, both from Co. Tyrone, dating to 1665+/-20 and 1705+/-15 respectively (Breen and Forsythe 2004, 116-117).

5.11. MODERN

5.11.1. The advent of the steam engine, iron hulls and the screw propeller transformed shipping, especially after 1820 when the technologies came into widespread use. This period of increased prosperity was reflected in a large volume of coastal trade, much of which was involved with transporting coal and raw materials, such as iron ore to drive industry, but also with the booming herring and fishing industries. The early years of this coastal trade were dominated by the well-established wooden sailing vessels such as schooners, brigs, brigantines and snows (Breen and Forsythe 2004, 127-128). Hundreds of wrecks from this period survive around the coasts of the SEA 7 area (Larn and Larn 1998, section 6-7).

5.11.2. Wooden sailing vessels continued to be used into the early 20th century but were doomed once the technology of steam and iron began to develop. The first really successful and commercially viable steam vessels were developed in the first decade of the 19th century. The steam tugboat *Charlotte Dundas* was built in Scotland in 1801 and has been described as 'the first practical steamboat' (Marsden 1997, 105). These first steam vessels were paddle steamers, but their disadvantages for ocean-going journeys led to the adoption of the fully immersed screw propeller around the middle of the century (Breen and Forsythe 2004, 128-129).

5.11.3. The Sound of Mull is notorious for the concentration of shipwrecks in or around it, many of which were early paddle steamers. This concentration is due to west coast of Scotland being the birth place of the first commercial steamships, where they were employed to ferry passengers and freight between the islands, Oban, Fort William and Glasgow from 1812. The first merchant steamship, *Comet*, built in 1812, was wrecked on Craignish Point in 1820. In these days breakdowns and even boiler

explosions were likely to occur (Larn and Larn 1998, 38; Duckworth and Langmuir 1967, 2-3).

5.11.4. Scallastle Bay in the Sound of Mull is marked on old charts as an admiralty anchorage area, and the bay is littered with wreckage, from piles of coal to Admiralty Pattern anchors. There are records of several mid and late 19th century shipwrecks in the bay (Whittaker 1998, 249-392). In 1994, six early 19th century guns were recorded here. The cannons had probably been jettisoned, a fairly common practice when a vessel was in danger of running aground (www.nasscotland.org.uk/projects/scallastle.html). This example shows that there is potential for finding ship-related items throughout the SEA 7 area, even though such material may not be directly associated with a wreck.

5.11.5. Two more recently investigated wrecks in the Sound of Mull include the wooden schooner *John Preston* and the Belfast steamer *SS Thesis*. The *John Preston* stranded and sank in 1882 with a cargo of Welsh slate when bound for Fraserburgh on the east coast of Scotland. This two-masted schooner was the 'Transit Van' of her age (www.nasscotland.org.uk/projects/jp.html). The 151 net tonnes iron steamship *Thesis* stranded and sank in 1889 on a voyage from Middlesbrough to Belfast with a cargo of pig iron, just two years after her launch. Her wreck allows a glimpse back in time to an earlier generation of steamships (Restell and Restell 2005).

5.11.6. Derry in Northern Ireland was one of the Irish ports from where people and goods were conveyed across the SEA 7 area by paddle steamers to ports in Scotland and to the south. The pattern of traffic varied from weekly up to thrice-weekly voyages but generally was one of steady increase in these years. The impulses encouraging travel ranged from the rise of the annual holiday and the great exhibitions from 1851 onwards, to the business deriving from Irish emigrants heading to Liverpool to board transatlantic ships and the seasonal migrations of Irish agricultural workers to England and Scotland. Furthermore the growing demand of industrial towns for food supplies stimulated an increase in cattle trade, while the shipping of general goods reflected the growth and spread of manufacturing industry (Pearsall 1989, 113-114).

5.11.7. The effect of the Great Irish Famine on emigration was immediate and dramatic. Between 1845 and 1855, more than 2.1 million people left Ireland, mostly embarking for the United States, a greater number than the combined total of all those who had left in the previous two-and-a-half centuries. Most people emigrated from Connacht and Ulster in the north and from the Leinster midlands. The desperation of the emigrants was reflected also in the changing routes, because the ships now left from small, little-used ports such as Westport and Killala. The conditions on these ships were pitiful; on some of these so-called 'coffin ships' the death rates were 30% and more (http://scripts.ireland.com/ancestor/magazine/emigration/famem.htm).

5.11.8. Emigration continued to be a dangerous undertaking, as evidenced by the sinking of the steamship SS *Norge* off Rockall Island in the western part of the SEA 7 area in 1914. Of the 700 emigrants on board making their way from Copenhagen to New York, 635 lost their lives. It was the biggest civilian maritime disaster in the Atlantic Ocean up to that time. Other losses near Rockall include the survey vessel *Leonidas* which foundered on Helen's Reef in 1812 and the brigantine *Helen* of Dundee, bound for Quebec, which foundered at Hasselwood Rock. 'The crew left most of the

passengers to drown, including seven women and six children' (http://en.wikipedia.org/wiki/Rockall).

5.11.9. At the beginning of World War I, the British fleet was sent from its home base at Scapa Flow in the Orkney Islands to refuge on the western coast of Scotland and on the north coast of Ireland, until adequate submarine defences were installed at Scapa Flow. In October 1914 the British battleship HMS *Audacious* was sunk by a mine in the first minefield laid by the German converted liner SS *Berlin* between Tory Island and Lough Swilly on the Northern Irish coast (Tarrant 2000, 11).

5.11.10. The channel between the Outer Hebrides and the mainland, The Minch, as well as the area around Rathlin Island, controlling the North Channel which separates the Irish Sea from the Atlantic, were favoured haunts for German U-boats in both world wars (Larn and Larn 1998, 37). These Western and Northern Approaches were frequented by German submarines who were engaged in an overall strategy to blockade transatlantic convoy supplies reaching the United Kingdom.

5.11.11. In World War II Colliers ferrying coal to the Royal Navy base at Scapa Flow were prime targets, as well as any merchant vessel or warship. For example, *U 79* was a mine laying German submarine on active duty around the north-west of Ireland and the western Scottish Isles. On 2 October 1917, she destroyed the cargo steamer SS *Lugano*, the destroyer HMS *Brisk* and the cruiser HMS *Drake* within a few hours off Rathlin Island in Northern Irish waters (www.northantrim.com/HMSDrake.htm; cf. Tarrant 2000, 59).

5.11.12. The concentration of traffic through the north-western approaches was even higher during World War II. The maximum of shipping losses in the SEA 7 area occurred between June 1940 and December 1941 (Tarrant 2000, 95-103; Humble 1981, 62-80, **Figure 6**), mainly due to the sheer volume of Atlantic convoys, with assembly points at Loch Ewe and Loch Eriboll on the western and north-western Scottish coast, and a convoy escort command operating from Loch Foyle in Northern Ireland (Larn and Larn 1998, 37).

5.11.13. During World War II lochs along the West Coast of Scotland were used for training crews in the use of small 'X' craft. These were small submarines that were designed to sink major German surface vessels in the heavily fortified fjords of Norway. One in particular, XE11 sank in Loch Striven during exercises, but was subsequently recovered and sold for scrap.

5.11.14. In October 1942 alone 56 allied ships were sunk by German U-boats in the limited area between Greenland and Ireland that was still free of the allied air patrols. However, from April 1943 onwards, losses of U-boats, typically with all hands, shot up dramatically, due to a combination of causes, among them the cracking of the Naval Enigma machine cipher by British forces (Tarrant 2000, 127).

5.11.15. RAF Coastal Command was set up in 1936 to protect against naval threats, and was intended to counter the U-Boat threat. During World War II long range Shorts Sunderland and VLR Liberators where based along the west coast of Scotland, Northern Ireland and on Iceland. Key bases included the lakes of Fermanagh and various Scottish bases. Interestingly, Sunderland Flying boats based on the

Fermanagh lakes were instrumental in the hunting and subsequent sinking of the German Battleship *Bismarck*.

5.11.16. 'Operation Deadlight' was the code name for the scuttling of the unwanted German U-boats which where surrendered to the allies after the end of World War II. U-Boat captains were ordered to take their boats to Lisahally, Northern Ireland or Loch Ryan, Scotland. About 121 U-boats were sunk in deep water off Northern Ireland, on the southern edge of the SEA 7 area and in the North Channel, during the fall and winter of 1945/1946 (Larn and Larn 1998, 37; http://uboat.net/fates/deadlight_map.htm).

5.11.17. In the late 1990s a commercial salvage company approached the MoD with plans to remove artefacts from up to 100 of the Operation Deadlight U-Boats. The U-Boats contain tons of pre-atomic metals that are extremely valuable and the company intended to conduct diving operations to recover them. Permission was not granted as objections were raised from the other allies, i.e. Russia and the USA (Joyce 2005-2006, 10).

5.11.18. The most famous of the Hebridean wrecks, however, was the SS *Politician*, which went ashore between Eriksay and South Uist in 1941 carrying 243,000 bottles of whisky. The outcome of a huge steamship wrecked on a remote island, carrying a vast quantity of spirits requires no explanation, other than to say 'the islanders maintained their historic tradition with regard to shipwreck'. The event was the basis for Sir Compton Mackenzie's novel 'Whisky Galore', which in turn was made into a film featuring Barra (Larn and Larn 1998, 37).

6. PREVIOUS INVESTIGATIONS

6.1. OUTLINE

6.1.1. Previous investigations within the SEA 7 area fall under four broad themes:

- Protected wrecks
- Wreck investigation prompted by research and outreach
- Development-led investigation
- Coastal archaeological research

6.2. PROTECTED WRECKS

6.2.1. There are five wrecks protected under the *PWA 1973* within the SEA 7 area, the *Swan*, the Kinlochbervie wreck, *HMS Dartmouth* and the Mingary castle wreck off the Scottish coast, and *La Girona* off Northern Ireland (Appendix 1). They have all been subject to monitoring surveys as well as more detailed investigations.

6.2.2. The monitoring surveys are carried out on behalf of the heritage agencies and generally comprise diver inspection, and photographic and/or video recording. Measured surveys are also undertaken, as well as geophysical and magnetometer surveys in some instances. Excavations have been carried out on three sites, the *Swan, HMS Dartmouth* and *La Girona*.

6.2.3.   Historic Scotland retains details of the historic wrecks in Scotland. Furthermore, each site generally has a site licensee with an appropriate nominated archaeologist to offer advice on technical matters. These licensees usually conduct more detailed surveys and archival research and can be valuable sources of information. They are required to submit annual reports of the work carried out under license to the heritage agencies.

6.2.4.   To date no wrecks are protected under the *PMRA 1986* in the SEA 7 area. However, all aircraft lost while on active service during both World Wars are automatically protected, and the MoD can protect vessels that were in military service when they were wrecked (see 4.4 this document).

6.3.   WRECK INVESTIGATION PROMPTED BY RESEARCH AND OUTREACH

6.3.1.   Apart from the work undertaken at the protected wreck sites, shipwreck research on the Scottish west coast has mainly focussed on the Sound of Mull area. The Nautical Archaeological Society Scotland (NAS Scotland) initiated the *Sound of Mull Archaeological Project* (SOMAP) which has been running since 1994. It has been joined by an advanced NAS project – *Wreckmap* – in more recent years.

6.3.2.   The *Wreckmap* Project aims to get UK divers to collect and report basic archaeological and biological information about a wreck site that they dive. The SOMAP Project aims specifically to the Sound of Mull area, comprising three of four protected wrecks within the Scottish part of the SEA 7, the *Swan, HMS Dartmouth* and the Mingary castle wreck site as well as several other wrecks, among them *SS Hispania*, *SS Shuna*, *SS Rondo*, *John Preston*, the Scallastle Bay wreck site and the *Thesis* (www.nasportsmouth.org.uk/ projects/index.php).

6.3.3.   SOMAP has co-operated with other institutions, for example several remote sensing surveys were undertaken by SOMAP together with the School of Ocean Sciences at the University of Wales in Bangor in order to investigate wreck sites and to examine sediment transport and environmental conditions within the Sound of Mull. Additional sidescan work was undertaken by the Archaeological Diving Unit (ADU) based at the Scottish Institute of Maritime Studies, University of St Andrews (www.lochalinedivecentre.co.uk/remotesense.htm).

6.3.4.   In Northern Ireland, the *Maritime Archaeology Project* (MAP) was set up from 1995 to 1997, the major aim of which was to create a database of all underwater archaeological sites in Northern Ireland's coastal waters. Other activities included the training of an archaeological diving team, liaison with the sports diving community and the stimulation of interest and research into maritime archaeology (McErlean et al. 1998, 3). As a result, a maritime record containing approximately 3,000 wreck sites was established in Northern Ireland.

6.3.5.   The *Dive into History* scheme encourages sports divers to fill out a form giving information on wreck sites they discovered and for which they receive a small sum to cover some of their diving expenses. In 1995 the first government-funded wreck excavation took place off the North Antrim coast near Cushendun under the MAP project, of the *Taymouth Castle* which sank in 1867 (McErlean et al. 1998, 3-4).

6.3.6. In 1997, the University of Ulster in partnership with the Environment and Heritage Service Northern Ireland embarked on a programme of seabed mapping in order to record the submerged and buried archaeological resource using a suite of geophysical equipment including a side-scan sonar, a sub-bottom profiler and a proton precession magnetometer. This research has imaged 80 19th and 20th century wrecks, and 20 targets of further archaeological potential (Quinn et al. 2000, 294). In 1999, a reconnaissance side-scan sonar survey combined with diving investigations around Rathlin Island identified 13 shipwrecks (Quinn et al. 2002).

6.3.7. A diving investigation carried out by a team of divers took place on U-Boats sunk as part of Operation Deadlight. This project was led by Innes McCartney of Periscope Publishing Ltd and a number of U-Boats were the subject of diving investigations. **Plate 4** shows the twin props of U861, photographed during these investigations.

6.3.8. A large number of Operation Deadlight vessels are though to lie within the SEA 7 study area, but the exact positions of all the U-Boat remains is not known. Only 58 of the 116 vessels scuttled or sunk were in their intended position during the disposal operation. The remainder either parted tow or were lost as they were being brought to their designated areas. Only diving investigation and or geophysical survey will ascertain exact positions (http://www.operationdeadlight.co.uk/).

6.3.9. Geophysical surveys and diving investigations have been carried out around the island of Rockall in searches for the SS *Norge* wreck site. Jeff Keep of New Frontier Diving provided a brief synopsis of results carried out to date but given the extreme weather conditions and the rugged sub-sea terrain, survey time has been strictly limited. The wreck has yet to be re-located but searches will continue.

6.3.10. The Irish National Seabed Survey (INSS) is a seven year project which started in 2000. The INSS is primarily about acquiring baseline information to promote and encourage research in marine science and covers the area directly south of the SEA 7 area. The multibeam sonar dataset obtained images of many shipwrecks, and the project clearly indicates that a similar potential exists within the adjacent SEA 7 area (www.gsiseabed.ie/).

6.4. DEVELOPMENT-LED INVESTIGATION

6.4.1. In 1998, parts of the seabed in SEA 7 west of the Hebrides were surveyed by the Atlantic Frontier Environmental Network (AFEN), an organisation comprising more than 20 oil and gas operators as well as the Department for Trade and industry (DTI), the Scottish Executive Environment and Rural Affairs Department (SEERAD) and the Joint Nature Conservation Committee (JNCC). As the survey aimed to record only features of a size bigger than 200m, no wrecks were discovered or investigated during the work (www.ukooa.co.uk/issues/Afen/v0000313.htm).

6.5. COASTAL ARCHAEOLOGICAL RESEARCH

6.5.1. The Royal Commission on the Ancient Historical Monuments of Scotland (RCAHMS) undertook a major survey of the Western Isles beginning in 1914 (RCAHMS 1928). Major combined survey and excavation projects were again

undertaken in the late 1970s and early 1980s but have rarely been published, apart from the excavation of an important Mesolithic settlement on Rum (Wickham-Jones 1990).

6.5.2.   Mesolithic research in Scotland has largely been concentrated on the west coast. In the 1990s a substantial database was created for sites from the Solway Firth up the west coast of Scotland to the island of Rum (Finlayson 1995, 261).

6.5.3.   Two recent major research projects were conducted during the decade between the late 1980s and 1990s. These field projects shifted the focus away from the formerly predominant examination of individual sites (e.g. Bishop 1914; Newall 1959; Mercer 1968; 1971) towards the integrated study of whole landscapes:

- The *Isle of Ulva Project* in connection with the *Oban Archaeological Project*, funded by Historic Scotland, focused on the colonisation, early settlement and transition to farming in this maritime region. The initial programme started in 1987, and the work was resumed in 1999 (Russell et al. 1995; www.arcl.ed.ac.uk/arch/clivebonsall/ page6.htm);

- Four islands dominate the group, Jura, Islay, Oronsay and Colonsay. From 1988 to 1998, the *Southern Hebrides Mesolithic Project* (SHMP) has attempted to develop a regional perspective on Mesolithic settlement in the region, including the islands of Jura, Islay and Oronsay. The central goal of the SHMP was the reconstruction of the Mesolithic settlement system in this area between 8,000 and 7,000 BP (Mithen 1995; 2000a; 2000b).

6.5.4.   A project designed to look at the relationship between the early inhabitants of the area and the sea was set up at the Department of Archaeology at Edinburgh University in 1998. *Scotland's First Settlers* (SFS) is a regional study of the earliest settlement (the Mesolithic) around the Inner Sound, the body of water between Skye and the mainland (www.oisf.org.uk/sfs/sfs_2002.htm; www.historyscotland.com/features/firstsettlers.html; www.pabay.org/sfsn101.html).

6.5.5.   Recent *Coastal Zone Assessment Surveys* (CZAS), mostly sponsored by Historic Scotland (HS), have covered around 20% of the Scottish coastline. The surveys recorded the geomorphology and erosion visible at the time of survey as well as the archaeological landscapes themselves. The project nearly quadrupled the number of sites known. Within the SEA 7 area, the survey was targeted to the Isles of Lewis, North and South Uist, Benbecula, Barra and Vatersay on the Outer Hebrides, to Islay, Coll, Tiree, Fladda and Lunga on the Inner Hebrides and to the peninsula surrounding Inverpolly Forest on the mainland (Ashmore and Dawson 2002, 2-3; Dawson 2003, 4; www.scapetrust.org/html/czas.html).

6.5.6.   Between 1985 and 1995 research was carried out by the Edinburgh University Department of Archaeology on the Island of Lewis. The area of investigation extended from Garenin and Galson in the north to Uig in the west and covered a vast time scale from the Neolithic to the Post-Medieval period. The Archaeological Department maintains a permanent research station at Callanish farm in the Western Isles (Church and Burgess 2003; www.arcl.ed.ac.uk/arch/lewis/):

- The *Calanais Archaeological Research Project*, conducted between 1985 and 1995, comprised extensive coastal and also underwater research on the isle of Lewis on the Outer Hebrides. (www.arcl.ed.ac.uk/arch/annrept/calanais.htm; www.arcl.ed.ac.uk/arch/annrept/bharabhat.htm);

- The *Calanais Fields Project, Isle of Lewis* 1999-2000, explored buried field systems dating from the Neolithic to the Early Bronze Age (www.arcl.ed.ac.uk/arch/callanish/99/index.html).

- The *West Lewis Landscape Project* located and recording post-medieval archaeological sites on the island (www.arcl.ed.ac.uk/arch/resproj.html#lewis);

- The *Uig Landscape Survey project* (ULS) investigated a Bronze Age islet site at An Dunan and a relict landscape at Guinnerso (www.arcl.ed.ac.uk/arch/lewis/).

- The ULS excavations were carried out at the same time as a detailed *Coastal Erosion Assessment of Lewis* (CEA(L)) for Historic Scotland (Burgess et al. 1997). CEA(L) field-walked over 510km of coastline along north Lewis. The survey examined coastal erosion, archaeology and geomorphology within a 100m band from the actively eroding edge and recorded over 1,000 previously unrecorded monuments from prehistoric to late 19th century;

- The *Bostadh project* of 1996 focused on the rescue excavation of Norse and Late Iron Age buildings and middens at Traigh Bostadh on the island of Bernera, West Lewis (www.arcl.ed.ac.uk/arch/cfa/tim/index.html);

- The *Garenin Landscape Project* 1994-1995 was set up to investigate the archaeology of the Township of Garenin in Carloway Parish, West Lewis. Small scale excavations on sites of interest in the area included a possible Norse settlement, a promontory fort and three illicit stills (www.arcl.ed.ac.uk/arch/annrept/garenin.htm).

6.5.7.   The Scottish Trust for Underwater Archaeology (STUA) at the University of Edinburgh mainly concentrates on crannog research in the lakes of Scotland, culminating in the foundation of the Scottish Crannog centre Kenmore. The 2003-2005 programme included an investigation of Loch Tay as part of the *Ben Lawers Historic Landscape Project* (www.crannog.co.uk/docs/underwater_archaeology/underwater_archaeology.html; www.crannog.co.uk/docs/research/research.html).

6.5.8.   The *Papar Project* of the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) focuses on all place names In the Northern and Western Isles of Scotland which have the Viking name 'Papay' or 'Papil', meaning 'the island/settlement of the priests' in order to make a better assessment of the association with Celtic priests which the name suggests. The first phase was

completed in 2001-2002. There have been no linguistic surveys on the Hebrides previously (www.rcahms.gov.uk/papar/index.html).

6.5.9.   In Northern Ireland, coastal and underwater archaeological research has been promoted by the EHSNI and by the Centre for Maritime Archaeology, University of Ulster. An extensive intertidal research programme has been conducted in Strangford Lough south of the SEA 7 area during the 1990s. In the 1980s, coastal work focussed on the excavations at the Mesolithic site of Mount Sandal whose people exploited a coastal and estuarine environment. This work encompassed further site excavations in the coastal zone, for example on the Magilligan shoreline (McErlean et al. 1998, 4-6).

6.5.10. Two recently undertaken seasons of coastal survey work undertaken by the Centre for Maritime Archaeology mapped and documented approximately 200 sites around the shores of Rathlin Island off Co. Antrim. In 2004, several excavations were carried out as part of the *Rathlin Island Research Project*, undertaken by the Centre for Archaeological Fieldwork of the Queen's University Belfast in partnership with the Centre for Maritime Archaeology on behalf of the Environment and Heritage Service Northern Ireland: Built Heritage.

6.5.11. Excavations included the site of a possible early medieval landing place at Portcastle (Moore and Forsythe 2005a), the Oweyberne Cave Complex dating from the Bronze Age onwards (Moore and Forsythe 2005b), the Oweydoo Cave, whose first occupation period is still unclear (Moore and Forsythe 2005c), and a complex of Neolithic/Bronze Age hut circles and field systems at Carravindoon (Moore and McConkey 2005). High definition 3D surveys were also carried out, for example, at buildings in the Ushet Port Complex (Moore and Forsythe 2005d).

7.   SPATIAL DISTRIBUTION

7.1.   INTRODUCTION

7.1.1.   The current mapped baseline of data upon which assessments of maritime archaeology are based has a number of inherent weaknesses, principally because of biases towards ships lost within the last 250 years. Although the baseline does account for maritime archaeological remains that are already known, they may not be a reliable guide to maritime archaeological potential.

7.1.2.   The weaknesses in the baseline can take substantial time to address in seeking to gauge potential, and may in any case prompt conclusions that are misleading. At the same time, the relationship between wrecks and their environmental context is not yet well understood, so assessments of the potential for maritime archaeological material based on mapped environmental proxies (e.g. seabed type) may also be misleading.

7.1.3.   This section discusses the difficulties of gauging at a strategic level the likely spatial distribution of maritime archaeological remains, and sets out the factors that should be taken into account in mapping known and potential sites in the course of individual Environmental Assessments.

7.2. **WRECK INVENTORIES**

7.2.1.   The majority of the available sources for wreck sites draw heavily from written and hydrographic records that began to be kept during the 18th century and later. These include:

- the United Kingdom Hydrographic Office (UKHO);

- the maritime section of National Monument Records in England, Scotland and Wales;

- local authority Sites and Monument Records (SMRs, increasingly known as Historic Environment Records (HERS));

- other shipwreck databases such as those held by Northern Ireland and the Republic of Ireland;

- Naval and merchant shipping records of losses.

7.2.2.   The UKHO holds data for shipwrecks and obstructions within the SEA 7 area. The bulk of these records are post 1700 AD. There are more than 3000 wrecks within the Northern Ireland shipwreck database, and the RCAHMS holds records for over 14417 maritime sites.

7.2.3.   These figures give some indication of the number of wrecks located in the SEA 7 area. These known wrecks can be plotted and used as a tool to aid plans for wreck avoidance. However, this data is far from being a comprehensive record of all shipwrecks within the area.

7.2.4.   Whilst the records from the 18th century onwards are extensive, they are not conclusive and do not always give exact positions. Wreck indexes often account for this ambiguity by assigning wrecks that are known to have occurred in a general area but without a precise location to a nominal position, known as a Named Location. Many wrecking events are grouped geographically by Named Locations, though such grouping need not imply any concentration in actual wrecks on the seabed.

7.2.5.   It should be noted also that the wrecks which have been recorded, even from the 18th century onwards, are only a proportion of those lost in recent centuries. Only certain types of losses and wrecks would have been recorded. It is reasonable to assume, for example, that existing records seriously under-represent losses of smaller vessels such as coasting craft and fishing boats.

7.2.6.   There is no comprehensive record that can be relied upon for shipwreck losses prior to the 18th century and the recording of such wreck events is sporadic. These limitations and the inherent bias toward documented wrecks can give a misleading impression on the quantity and distribution of wreck and underwater sites. As a result, archaeologists have to pursue different lines of enquiry to gauge the possible distribution of pre-18th century wrecks, and the distribution of unrecorded wrecks post-18th century.

7.3. WRECKS AND THEIR ENVIRONMENT

7.3.1.   Another limitation with regard to the known spatial distribution of shipwrecks lies in the relationship between the wrecks and their environment. The relationship between wrecks and the seabed environment is not well understood. The dynamics of the environment will have an impact on the character, extent and survival of wreck and associated artefactual remains. Generally, the proportion of wreck remains surviving on the seabed will be low in higher energy environments such as areas with strong tidal regimes, areas exposed to storm surge and wave action, and in areas with sandy, aerobic sediments. In lower energy environments, such as sheltered bays, estuaries, and in areas with a seabed consisting of mud, silt or other anaerobic sediments, the proportion of surviving materials might be expected to be higher. It might be reasonable, therefore, to assume that the number of wrecks surviving in low energy environments will be much higher than in high energy environments. However, volumes of shipping in the past may not reflect distinctions between high or low energy environments, hence environment may not be a reliable guide in gauging spatial distributions.

7.3.2.   Further, even an association between the survival of archaeological material and the energy of the seabed environment cannot be assumed. Some 16th century Armada wreck sites are of note with regard to this. Within the SEA 7 area, the site of *La Girona* revealed numerous precious artefacts which were covered by concretions, even though no wooden hull structure was preserved. Some hull remains of *Santa Maria de la Rosa* off south-east Ireland were only preserved because of the protective cover of the ballast mound on top of them. The hull of *La Trinidad Valencera* off the Northern Irish coast was resting in only a few metres of water and thus fully prone to the destructive effects of wave action. However, as the wreck broke up, sections of it scoured into pockets of soft sand on the seabed and were quickly covered over, preserving plenty of organic material (Breen and Forsythe 2004, 102-104). These processes can be seen on other sites in similar waters, where the formation of such a 'cover' can lead to the preservation of organic and other material in even the most dynamic of environments.

7.4. THE INCIDENCE OF WRECKING: HAZARDS

7.4.1.   In order for a wreck to survive on the seabed, there must first have been a wrecking incident. A substantial proportion of losses are related to the presence of natural hazards, which are often capable of being mapped. Such hazards include sandbanks, reefs, islets, headlands, archipelagos and channels, and in general areas of turbulent water and strong tidal currents. These hazards are magnified by less readily mapped variables such as wind, waves, storms, fog and so on.

7.4.2.   One area of wreck concentrations is the Sound of Mull off western Scotland, where navigational hazards like sandbanks and rocky shores combined with strong winds caused numerous shipping disasters, repeatedly even of vessels lying at anchor. Among them are the *Swan*, the Mingary Castle wreck, HMS *Dartmouth*, the Scallastle Bay wreck, *John Preston* and SS *Thesis*.

7.4.3.   Two other extremely dangerous routes within the SEA 7 area include the two main channels, notably The Minch between the Hebrides and the Scottish mainland and the North Channel connecting the Irish Sea to the Atlantic Ocean. However, their

perilous nature was not only caused by narrow routes between rocky shores and numerous islets, which often – especially under bad weather conditions – led to confusion with regard to the right track. The danger also had historical and political reasons, when certain parties tried to obtain control over these entrances, for example during medieval periods, and especially during both world wars when U-boats focussed on these areas because of the convoys passing through them.

7.4.4.   It should therefore be borne in mind that impact with a navigational hazard is only one of several different types of incident that may result in a wreck on the seabed. Other significant types of incident include fire, foundering, collision, violent engagement and abandonment. The spatial distribution of these types of wrecking incident is not readily forecast, though any patterning in existing recorded losses attributable to these types may provide some indication.

7.5.   VOLUMES OF SHIPPING

7.5.1.   A further line of enquiry in gauging the spatial distribution of unrecorded wrecks is to consider the distribution and volume of historic shipping in general. A proportion of these overall populations would have become wrecks, so it is reasonable to suggest that the distribution of shipping through time will provide a guide to the spatial distribution of wrecks. These populations also provide context for wrecks that are discovered, insofar as the archaeological importance of any wreck will be related to the insight it provides into the more general human activity in which it was a casualty.

7.5.2.   While shipwrecks might be expected to cluster along shipping routes, these routes, be they ancient or modern, would not have been the only routes that vessels would have used, or the only corridors within which wrecks would have occurred. Notwithstanding the various bases being developed for mapping the possible spatial distribution of unknown wrecks, there will be a residual possibility of encountering wrecks of archaeological interest throughout the SEA 7 area.

8.   IMPLEMENTATION

8.1.   LINKS TO OTHER PLANS, PROGRAMMES AND POLICIES

8.1.1.   The north coast of Northern Ireland will become the future focus of survey for the Centre for Maritime Archaeology and will receive similar attention to that afforded to Rathlin Island (Wes Forsythe, pers. comm.).

8.1.2.   In June 2005 the Scottish Executive announced the start of a two stage process to create the first Coastal and Marine National Park in the UK, with the first park possibly being in place by 2008. This Coastal and Marine National Park would have the same general goal as terrestrial national parks and would include as one of its key objectives the need to 'conserve and enhance the natural and cultural heritage of the area.'

8.1.3.   There are a number of sites being considered for Coastal and Marine Park Status. Within the SEA 7 study area they include: Argyll coast and Islands, Lochaber and Skye, and the Western Isles. A report dealing with the maritime historic environment

on behalf of Historic Scotland is currently being prepared (Dr Carol Swanson, pers. comm.).

8.2. MONITORING

Outline

8.2.1. The monitoring requirements for significant environmental effects of the implementation of a plan or programme is clearly set out in the guidance document: *A Practical Guide to the Strategic Environmental Assessment Directive* (ODPM 2005). Within the monitoring regime the document suggest that the following points could be included:

- What needs to be monitored?

- What sort of information is required?

- Where can information be obtained?

- When should remedial action be considered?

- What remedial action could be taken?

8.2.2. These points will be considered with reference to submerged maritime archaeological remains with the SEA 7 area.

What needs to be monitored?

8.2.3. A general description of the types of submerged maritime archaeological artefacts likely to be encountered during subsea oil and gas activities is discussed in section five of this document. Submerged archaeological material can range from simple log boats (e.g. the Gormanstown logboat, **Plate 5**) and hide covered vessels to ship borne artefacts lost overboard such as the Shiant torc. More modern examples include the remains of the as yet undiscovered SS *Norge* and merchant and military vessels and aircraft lost during both World Wars.

8.2.4. Oil and gas exploration and production activities that are likely to impact on these archaeological remains will need to be monitored. Activities that may have an impact include:

- Borehole and vibrocore survey;

- Grab survey;

- Diving operations and inspections;

- ROV operations;

- Construction of exploratory and appraisal wells

- Well head drilling and construction of main operational platform;

- Associated onshore works;

- Pipelaying operations.

What sort of information is required?

8.2.5. In the first instance a detailed assessment of the history of maritime activity within the proposed survey or development areas should be carried out. This will normally rely on existing records and secondary sources and be conducted as a desk based review. This will help to form a preliminary baseline and highlight possible areas of potential.

8.2.6. The baseline prepared in the desk based assessment can then be supplemented by the archaeological analysis of geophysical and geotechnical survey data. Surveys conducted in the course of planning or implementation of a development, and data acquired historically in previous surveys, can be reviewed to determine the presence, extent and character of seabed remains and their relationship with the local environment.

8.2.7. Where new surveys are being planned, it is often possible to incorporate archaeological objectives into the survey programme, adding value to the resulting data.

Where can information be obtained?

8.2.8. A number of sources of information can be consulted to help establish a detailed baseline:

- **UK Hydrographic Office (UKHO)** Wreck Index: Has been responsible for charting shipwrecks since 1913. Also holds records of uncharted wrecks where general locations of loss are known but precise positions are not. Data now made available via SeaZone.

- **National Monuments Records (NMRs):** In the SEA 7 area maintained by Northern Ireland and Scotland. Include maritime sections that contain records of wrecks, obstructions, casualties, aircraft and other archaeological material. Cannot be considered a comprehensive record of losses at sea as the majority of records date from between the mid-eighteenth century to the mid-twentieth century.

- **Sites and Monuments Records (SMRs) / Historic Environment Records (HERs):** Maintained by local authorities. Essentially an archive of archaeological sites of various types and periods. An increasing number of SMRs/HERs contain details of marine sites;

- **The Receiver of Wreck (UK) (Maritime and Coastguard Agency):** Holds details of all recovered wreck material that has been reported to the Receiver;

- **Shipwreck Database of Northern Ireland:** A computerised database of underwater archaeological sites in Northern Ireland coastal waters consisting of over 3000 entries, accessed via the EHSNI;

- **Shipwreck Database for Ireland:** The Underwater Unit of the Department of the Environment, Heritage and Local Government, is currently compiling a National Shipwreck Inventory for the Republic of Ireland;

- **Existing geophysical and geotechnical survey data:** Often the client commissioning the EIA will hold a series of existing geophysical data for the study area in question. This is likely to include bathymetric, sidescan survey, magnetometer survey, borehole survey, grab survey, benthic survey and/or diving/ROV inspection reports which, if acquired to a suitable specification, may provide direct evidence of the presence or absence of archaeological material within the survey footprint. However, this data may not have been collected at sufficient resolution for the purposes of archaeological interpretation of seabed remains;

- **Historic charts:** Cartographic charts held by the UKHO, museums, libraries and local record centres can inform on the presence of maritime archaeological remains that no longer appear on modern charts;

- **Royal Air Force:** The RAF Museum holds records of aircraft losses during World War I, the inter war years, and during World War II;

- **Imperial War Museum:** Contains contemporary documents, photographs, naval records and so on, for both World Wars. Records of Luftwaffe losses are also held here;

- **National Maritime Museum:** Holds a considerable amount of contemporary and secondary records, maps, plans and so on, for a number of maritime research areas including registers and details of merchant and naval shipping losses from both World Wars;

- **Ulster Folk and Transport Museum:** Collection of full size vessel and boats, archive collection includes paintings, engravings, photographs and a number of technical plans;

- **Naval Secretariat, Wrecks Section:** Provides information on Royal Naval wreck sites and sites protected under the PMRA 1986;

- **Lloyd's Register of Shipping:** Maintains details of shipping and shipping losses from 1760 to the present day. Has also published the *Shipwreck Index of the British Isles* (e.g. Larn and Larn 1998);

- **Various published sources:** Books relevant to the archaeology and history of proposed development area should be reviewed. Sources can be found through local libraries and via internet searches.

When should remedial action be considered?

8.2.9.   Remedial action should be considered at the planning stage of the proposed development. The preparation of a detailed and comprehensive desk based assessment of the known and potential maritime archaeological resource within the development area and the anticipated impacts of the scheme will normally include an assessment of significant effects and proposals for appropriate mitigation.

8.2.10.   During the construction and operational phases of a development, maritime archaeological remains may be encountered that have previously remained undetected. At this stage the relevant Consulting Authorities/Bodies should be notified and operations within the immediate vicinity suspended, pending recommendations. The process can be expedited by the presence of a monitoring archaeologist or by protocols for archaeological reporting and advice.

8.2.11.   There is a legal obligation to report recovered wreck to the Receiver of Wreck under the MSA 1995. Crashed military aircraft are automatically protected under the PMRA 1986, and the relevant authority should be contacted as soon as they are discovered.

8.2.12.   If avoidance is not possible, then a range of archaeological recording and/or recovery options may be considered.

What remedial action should be taken?

8.2.13.   Preservation *in situ* will always remain the preferred methodology when dealing with submerged maritime archaeological remains, providing that it can be proven that the proposed development will not impact identified remains or destabilise the surrounding environment. With known archaeological remains this can be achieved at the planning stage, often by rerouting/relocating elements of the proposed development area or by implementing an exclusion zone.

8.2.14.   When new archaeological remains are uncovered during operations then a number of actions can be employed, based on an assessment of the remains by a suitable qualified archaeologist to establish their extent and character. Decisions on subsequent actions will normally be made by the relevant Consulting Authorities/Bodies.

8.2.15.   If the archaeological remains are deemed to be of sufficient regional, national or international importance then the relevant authority may have recourse to statutory protection of the site. Alternatively, the Consulting Authorities/Bodies may conclude that preliminary survey, detailed survey and/or full excavation may fulfil archaeological requirements.

8.2.16.   The relevant Consulting Authorities/Bodies may recommend a monitoring regime to ascertain the indirect impact of the development on the archaeological site and its environment.

8.2.17.   Recommendations for archaeological sites will normally include recording, analysis, material conservation, publication and deposition of an accessible archive.

9. CONCLUSION

9.1. It was not appropriate at a strategic level to attempt a quantitative baseline based on documented wrecks and casualties. As well as being a considerable task in itself such a baseline would have limitations in terms of its coverage in terms of period and ship type. This report has therefore concentrated on a review of existing data and published sources.

9.2. The DTI SEA programme is intended to address the impact of oil and gas activities on the environment, and, in this case, maritime archaeological remains. As part of that process there is a requirement for the consultation of authorities who have environmental responsibilities within the SEA area. For the SEA 7 area the relevant Consulting Bodies (Consulting Authorities in Scotland) with regard to maritime archaeology are the Environment and Heritage Service for Northern Ireland and Historic Scotland, who were both contacted for comment on the SEA 7 process.

9.3. The public are also to be contacted as part of the consultation process and Article 6 (4) of the directive defines the public as being those '…affected or likely to be affected by, or having an interest in (a plan or programme) including relevant non-governmental organisations'. Several further consultations were made pursuant to this clause, and this document is to be made available to the public for consultation by way of the DTI's SEA website.

9.4. There exists a comprehensive corpus of legislation, plans and polices concerned with the protection of the submerged maritime archaeological resource within the SEA 7 study area.

9.5. At the international level some protection is afforded to the submerged maritime archaeological resource by way of the *United Nations Convention on the Law of the Sea 1982,* the *UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001,* and by *UNESCO World Heritage Status.* In the SEA 7 area, the maritime cultural heritage around St. Kilda is currently protected as a World Heritage Site. The World Heritage Site of the Giant's Causeway and Causeway Coast does not protect the maritime cultural heritage as yet, but may do so if its designation is reconsidered in the future.

9.6. At the European level protection is afforded by the SEA Directive itself, and by the Environmental Impact Assessment Directives. The UK is also party to the *European Convention on the Protection of the Archaeological Heritage (*Revised) 1992 (the Valletta Convention), which requires member states to institute a legal system for the protection of archaeological sites.

9.7. Across the UK there are four main pieces of legislation that can protect submerged maritime archaeological remains: *Protection of Wrecks Act 1973*, *Protection of Military Remains Act 1986*, *Merchant Shipping Act 1995* and the *Ancient Monuments and Archaeological Areas Act 1979* (superseded by the Historic Monuments and Archaeological Objects (NI) Order 1995) in Northern Ireland).

9.8. Both Scotland and Northern Ireland have their own plans and polices that protect maritime archaeology. In Scotland these include National Planning Policy Guideline 5 and 13 and Planning Advice Note 42. In Northern Ireland, *Planning Policy*

Statement 6 can be used to deal with the protection of maritime archaeological resource.

9.9.   This document sought to outline the known history of maritime activity within the SEA 7 area. Despite being an extremely large body of water that at times can produce dangerous sea and weather conditions and encompasses the rugged coastlines of western Scotland and Northern Ireland, the area has been used extensively by seafarers from at least the Mesolthic up to present times.

9.10.   During each time period there has been evidence of human activity within the SEA 7 area, often being demonstrated by the discovery of maritime archaeological remains. The waters between the north east of Ireland and Scotland have been used as a means of communication throughout the centuries; at one stage the Irish kingdom of Dalriada even sat on both sides of the North Channel. Maritime activity within the area would have started with simple log boats and hide covered vessels, moving up to Viking clinker built vessels and their successor, the Highland Galley.

9.11.   The Dutch East India Company or *Verenigde Oostindische Compagnie* (VOC) frequently used the *achter om* route to the East Indies to avoid various naval battles, English privateers and prevailing winds in the English Channel. This route would have brought their vessels across the North Sea, around Scotland and into the North Atlantic (and the SEA 7 area). As a result a number of VOC vessels, often carrying a quantity of specie, have been lost around Scotland and the Islands. One of these, the *Adelaar* lies with the SEA 7 area.

9.12.   Some of the first transatlantic crossings would have traversed the study area, and with the advent of steam the shipbuilding yards of Harland and Wolf in Belfast, and those on the west coast of Scotland and in the Clyde would have added to the volume of shipping across the area

9.13.   During both World Wars the SEA 7 area played a pivotal role in the supply of food, materials and men for the defence of Britain and the assault on Europe. The SEA 7 area was known as the North Western Approaches and was one of the main supply routes into Britain. Convoys converged in the SEA 7 area, often near the islet of Rockall and were then escorted into home waters via the bottle neck of the North Channel between Ireland and Scotland.

9.14.   U-Boats were active in SEA 7 during both World Wars. During World War II U-Boats were responsible for a considerable amount of shipping losses in SEA 7.

9.15.   The study also addresses the potential within the SEA 7 for aircraft wrecks of historic interest. All aircraft lost in military service are automatically protected under the Protection of Military Remains Act 1986. RAF Coastal Command in particular was active in the SEA 7 area during World War II, having bases on the west coast of Scotland, in Northern Ireland, and in Iceland.

9.16.   Previous investigations of maritime archaeological remains within the SEA 7 area are discussed. Investigations in the area have been carried out by a number of governmental, non-governmental and voluntary organisations and individuals.

9.17. The types of previous investigations range from coastal surveys like those funded by HS and conducted by SCAPE, to site specific investigations of wrecks such as the WA diving investigations of wrecks designated under the *PWA 1973*.

9.18. The spatial distribution of submerged archaeological remains is discussed, and comments are made on the limitations that any mapped baseline of data would include.

9.19. The report concludes with a comment on the potential impacts of oil and gas activities on the submerged maritime archaeological resource and suggests possible monitoring methodologies.

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HMS *Dartmouth*

Built: by John Tippits in Portsmouth Dockyard in 1655, rebuilt 1678
Type: Frigate or fifth rate
Dimensions: length: 80 feet, beam: 25 feet, depth of hold: 10 feet, armed with 32 guns
Lost: 9th October 1690
Complement: approximately 130 (6 survived)

The Dartmouth had a long and varied career including missions to Puerto Rico and the Mediterranean where she is likely to have picked up shipworm. In 1688 she was downgraded to the status of a fire ship and her armament and crew were reduced, but in 1689 she was refitted as a fifth rate, highlighting the shortage of serviceable ships at the time. She was then based in Ireland and was involved in breaking the boom defences during the siege of Derry. In 1690 she departed for what was to be her final mission, to quell a Jacobite rebellion in Scotland. While trying to shelter from a violent storm in the Sound of Mull she was driven across the water and struck the rocky islet of Eilean Rubha an Ridire, breaking her back and sinking.

The wreck lies within a 'wedge shaped' gully north west of Eilean Rubha and is covered over by kelp for a lot of the year (WA, Dartmouth). The site is shallow and with the potential to be buffeted by storm surge but is protected on the east by the island. In 2003 WA reported the site to be relatively stable.

Summary of Archaeological History

1973: Amateur divers from Bristol University locate the site. Jon Adams and the Bristol divers find the ship's bell and identify the wreck as the Dartmouth. Unknown divers raise an anchor and cause damage to the site.
1973-1978: The newly formed Bristol Undersea Archaeology Group (BUAG) and the Scottish Institute of Maritime Studies conduct three seasons of excavation.
1974: April, the site is designated under the Protection of Wrecks Act 1973.
1979: The site is de-designated following excavation.
1991: The ADU conduct diving operations on the site and recommend that the site be re-designated
1992: Salvage attempts on the site prompt re-designation.
1994: The ADU conduct diving operations on the site and witness unauthorised diving. The ADU report that more of the site is exposed than on their last visit.
1999: A visitor trail is set up in conjunction with NAS Scotland.
2000: The ADU conduct diving operations on the site. A warning sign is erected on Eilean Rubha.
2000-2004: Philip Robertson of the Lochaline Dive Centre holds a visitor licence.
2003: WA conduct diving operations on the site reporting the site to be stable.
2004: Philip Robertson obtains a survey licence.

Duart Point

Built: 1640s
Type: British early frigate-type
Dimensions: unknown
Lost: 13th/14th September 1653
Complement: unknown

The site is currently identified as the wreck of the *Swan*, identified by the unique survival of ornate wooden carvings. The Commonwealth warship heralded a new era in English shipbuilding as one of the earliest frigates; designed to be small and fast. The *Swan* along with her companion ships the *Martha* and the *Margrett* were on campaign to block Dutch landings on the Western Isles of Scotland when all three vessels were driven onto Duart Point, and lost in a violent storm in September 1653.
The site lies to the east of Duart Point and seven concreted cast iron guns, concretions, ballast and organic material are visible. Dr Colin Martin has carried out extensive excavation on the site and a lot of material has been published.

Summary of Archaeological History

1979/1980: The wreck is discovered by John Dadd, a naval diving instructor.
1991: John Dadd informs the ADU of the wreck. The ADU conduct diving operations on the site and recommend it for designation. Divers including the Dumfries and Galloway Sub Aqua club locate the wreck and attempt to raise some guns before being made aware of the importance of the shipwreck, they then join the work to safeguard the site. Some of the items that were raised are now with the National Museums of Scotland.
1992: The site is designated under the Protection of Wrecks Act 1973. The ADU conduct diving operations on the site and recover a number of items exposed by erosion. The items are conserved by the National Museums of Scotland. Dr Colin Martin obtains a survey licence for the site.
1993: The Scottish Institute of Maritime Studies protect areas of the site by covering it with sandbags. The ADU conduct diving operations on the site.
1994: The Scottish Institute of Maritime Studies undertake a detailed survey. The ADU conduct diving operations on the site. A diver trail is opened on the site in conjunction with SOMAP and for the first time a protected wreck site is opened to visitors.
1995: February, The Cromwellian shipwreck off Duart Point, Mull: an interim report, In situ corrosion studies on the Duart Point wreck, 1994, and Experiments into the deterioration characteristics of materials on the Duart Point wreck siteare published in IJNA.
1996: The ADU conduct diving operations on the site.
1998: Scotland's Historic Shipwrecks, by Colin Martin is published.
1999: February, A 17th-century binnacle and mariners' compasses from Duart Point Mull, is published in IJNA. May, Monitoring the effect of sacrificial anodes on the large iron artefacts on the Duart Point wreck, 1997, is published in IJNA.
2000: The ADU conduct diving operations on the site and report illegal anchoring.
2000-2003: Dr Colin Martin holds an excavation licence.
2000-2004: Philip Robertson of Lochaline Dive Centre holds a visitor licence.
2001: The ADU visit the licensee on the site.
2003: WA conducts diving operations on the site and carry out a visual inspection.
2004: Dr Colin Martin holds a surface recovery licence.

Kinlochbervie

Built: Unknown
Type: Unknown
Dimensions: unknown
Lost: Unknown, possibly late 16th to early 17th century
Complement: unknown

The wreck site was discovered in 1997 by members of RAF Lossiemouth diving club. The site consisted of a spread of broken pottery, anchors and cast iron cannon scattered among boulders at the foot of an underwater cliff near Kinlochbervie.
Analysis of the pottery by Godfrey Evans, Curator of European Art at the National Museums of Scotland, identified the main pottery type as being an Italian maiolica ewar in the grotesque style, dating to the late 16th century.

Summary of Archaeological History

1997: The site is discovered by divers from RAF Lossiemouth
1997 -2000: Divers from RAF Lossiemouth conduct seabed searches and some survey work on the site every summer.
2001: The site is designated under the Protection of Wrecks Act 1973 on the 29th of June. In July the RAF team worked with the ADU and Time Team on the site.
2002: Philip Robertson of NAS Scotland raises concerns about the stability of the remaining pottery on the seabed and is granted an excavation licence. The excavation is funded by Historic Scotland. The results of the excavation and post excavation are published in the International Journal of Nautical Archaeology.

La Girona

Built: Naples, exact date unknown but around the mid 16th
Type: Galleass
Dimensions: Unknown
Lost: 1588
Complement: 1200+

La Girona was one of four galleasses that formed part of the Spannish Armada invasion fleet of 1588. After the operation was abandoned in the channel the fleet was ordered to return to Spain via Scotland and the west of Ireland. She initially had a complement of 121 sailors, 186 soldiers and 224 rowers but the total number on board swelled to over 1300 when she took on board the survivors of four other Armada vessels that were either wrecked or abandoned during the return voyage. Don Alonso Martinez Levia, second in command of the Armada, was one of those rescued.

Don Alsono decided to take the damaged *Girona* to Scotland were he thought they could receive aid, and planned to return to Spain after repairs had been made. *La Girona* wrecked en route off Port na Spaniagh in Antrim, close to Dunluce castle.

Summary of Archaeological History

1967: Robert Stenuit, commercial diver and salvage expert searches for the wreck and discovers it off Port na Spaniagh. He begins extensive salvage of the site.
1968: Salvage work continues.
1969: Robert Stenuit completes salvage on the site. Over 6000 hours of diving were logged. A large quantity of artefacts recovered, ranging from jewellery, early forks and cannons.
1972: The Ulster Museum in Belfast acquired the recovered artefacts for a fee of £132000 and are now on permanent display.
1991: The site is visited by the ADU who conduct a diving inspection of the site. Due to the extensive salvaging nothing of archaeological significance is observed.
1993: The site is designated under the Protection of Wrecks Act 1973 on April. The ADU conduct diving investigations on two areas of the site but nothing of archaeological significance is observed.
1995: The ADU conduct diving investigations on the site. Ulster Television film the licensee (Frank Madden) and the ADU team for marine archaeology in Northern Ireland news reports.
1996: The ADU conduct diving investigations on the site. The licensee reports the theft of a cannon from the site. The RUC are notified and begin investigations.
2000: The ADU conduct diving investigations on the site. The RUC underwater search team visits ADU operations and who demonstrate their diving systems.

Mingary Castle

Built: Unknown
Type: Unknown
Dimensions: unknown
Lost: Unknown, possibly mid to late 17th century
Complement: unknown

The site was reported to the ADU in early1999 when objects recovered from the site were declared to the Receiver of Wreck. Seabed remains consist of four iron cannon. A copper kettle, pieces of lead, a stoneware Bellarmine jug and several other objects have been recovered. No vessel structure has been observed on the site but the artefactual evidence suggests a mid to late 17thcentury date for the wreck. A possible lead vent apron for cannon has been recovered which possibly had a date of 1638 inscribed on it.

Summary of Archaeological History

1999: The site first comes to light when objects were declared to the receiver of wreck.
2000: The ADU visit the site in June and recommend designation under the Protection of Wrecks Act 1973. The site is designated on the 19th August.
2003: Channel 4 airs the wreck detective programme on Mingary Castle.

Adelaar

Built: 1722 VOC shipyard in Middenburg
Dimensions: Length 41m, beam 10.5m, draught 4.4m
Tonnage: 700
Lost: Between the 22nd and 24th March 1728.
Complement: 210 (120 sailors, 60 VOC soldiers, 30 company officials and passengers). All lost.

The *Adelaar* was on her third voyage to the Indies with the intention of obtaining tea, spices and porcelain for European trade. To pay for this cargo the *Adelaar* carried 500 8-mark bars of silver each stamped with the VOC monogram (*Verenigde Oostindische Compagnie* or Dutch East India Company), six bars of gold, 32,000 silver *ducatons*, and 45,000 copper 2-stuyver coins.

Captained by Willem de Keyser from Middenburg the *Adelaar* set sail on the 11th of March, taking the *achter om* or 'north about' route across the North Sea, around the top of Scotland and then in to the North Atlantic. Two weeks later, sometime between the 22nd and 24th of March she struck a reef off Greian Head on the island of Barra, Outer Hebrides.

The site was extensively salvaged at the time, by the islanders in the first instance and then by Alexander Mackenzie, an Edinburgh lawyer who held the sinecure of Admiral Depute for the Western Isles which he thought gave him exclusive rights to salvage the wreck. He employed Captain Jacob Rowe and his patented diving machine (an early diving bell, limited to shallow waters but sufficient for salvage operations on the *Adelaar*). They were able to recover a considerable amount of the cargo and cannon. A number of court cases followed which the Dutch were ultimately to win.

Summary of Archaeological History

1972: John MacLean of Cliad show Chris Oldfield, Simon Martin and Tony Long the position of the wreck. The site is investigated in conjunction with Colin Martin of the Institute of Maritime Archaeology, St. Andrews.
1974: Between 1972 and 1974 a series of excavations is carried out on the site by Colin Martin of the Institute of Maritime Archaeology, St. Andrews, and his dive team.

SS *Norge*

Built: 1881 by Alexander Stephen and Sons, Glasgow
Dimensions: 340.3ft x 40.8ft x 25ft (103m x 12.5m x 7.7m)
Tonnage: 3 318 gross 2 121 net
Lost: 28th June 1904 en route to New York.
Complement: 855, of which 635 were lost

The *Norge* started out as the Engels liner *Pieter de Coninck* and was intended to transport emigrants between Antwerp, Belgium and New York. The Belgian shipping company Engels collapsed and was forced to sell the vessel, in 1889. *Pieter de Coninck* was sold to the Danish Thingvalla line who renamed the vessel as *Norge.*

On the 25th June 1904 SS *Norge* picked up the last batch of passengers and began what would have been her 89th journey from Copenhagen.

On the 28th June the *Norge* was past St Kilda and journeying south of Rockall when conditions turned misty. As a precaution Captain Grundel steered the vessel well to the south of Rockall as a precaution, but when the visibility later improved he resumed the original course. At 0745 the *Norge* struck an underwater obstruction (St Helen's Reef near Rockall) and was stuck fast. The *Norge* sank in less than 20 minutes with the loss of 635 passengers and crew.

On of the main reasons for this heavy loss was the lack of sufficient lifeboats for the number of passengers carried, there was only enough space for 250 people in the bots carried by SS *Norge*. What made matters worse is the fact that although each lifeboat had a compass as per Danish law, Captain Grundel had them stored in a secure place on board the *Norge* for safekeeping.

As a result of this disaster Norway became one of the first countries to insist on every passenger liner leaving its ports to carry enough lifeboats to carry every passenger and crew member.
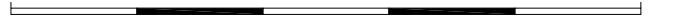
Summary of Archaeological History

2003: Survey and diving expedition organised by Kevin Heath (project leader/researcher) and included Jeff Keep (technical diver from New Frontier Diving), John Womack (diver), Vic Young (diver and team cameraman), Ian Whitaker (diver, cameraman and author of *Shipwrecks and Aircraft off Scotland*. Despite several dives no archaeological remains are observed, possible due to the extremely rugged seabed topography, which contains numerous gullies, troughs and peaks.

2004: On the 100th anniversary of the sinking of the wreck a joint Danish and British diving expedition is organised. Despite further dives the position of the wreck site remains unknown.

Study Area

0   500km

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Study Area   Figure 1

Study Area

● Sites protected under the Protection of Wrecks Act 1973, sections 1 and 2
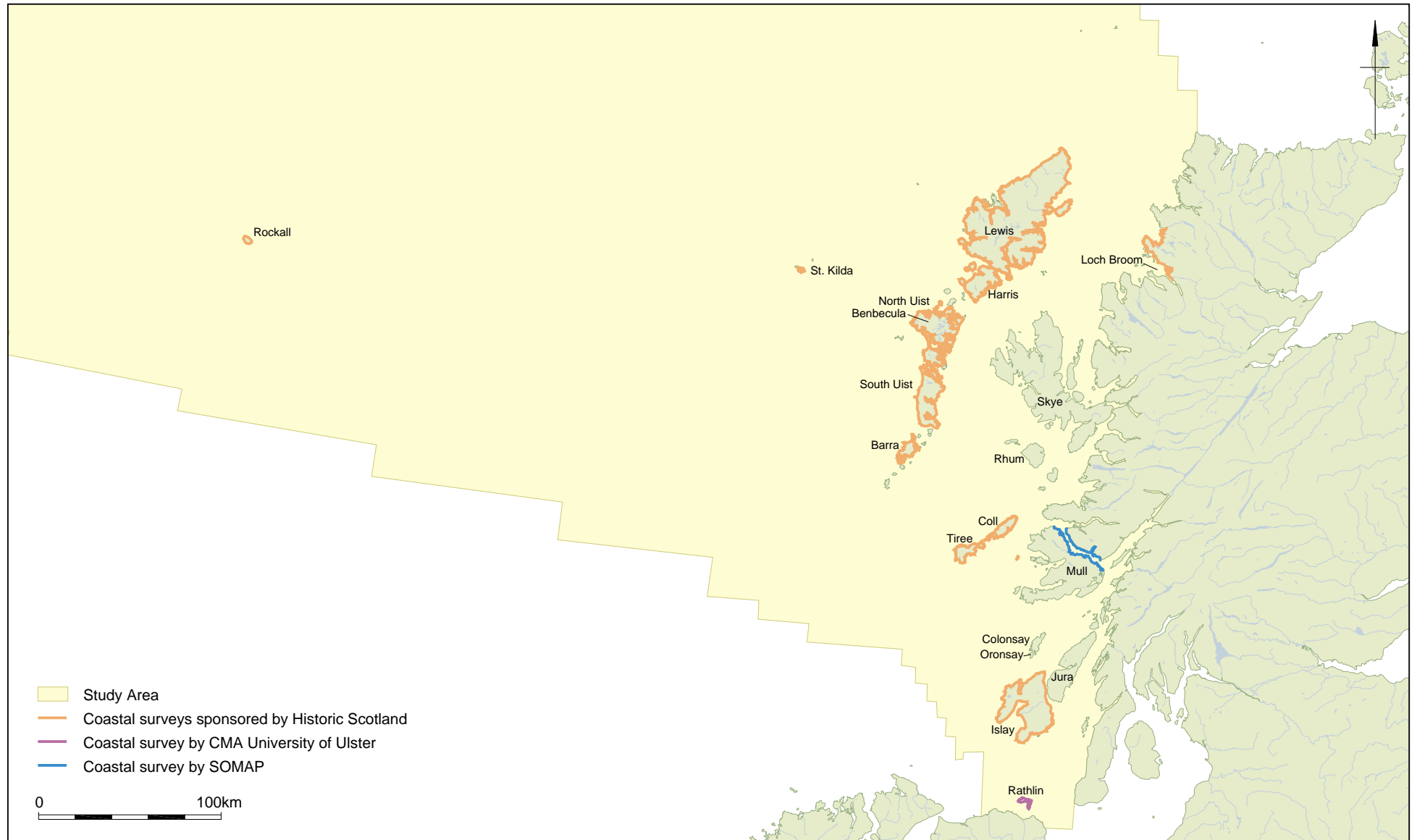
● Other sites mentioned in text

Kinlochbervie

SS Norge

St Kilda

Adelaar

Mingary Castle

Dartmouth
Duart Point

Mt. Sandel
La Girona
Broighter Boat

0   100km

Wessex Archaeology

Date:	08/03/06	Revision Number:	0
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Archaeological sites

Figure 2

Rockall

St. Kilda

Lewis

Loch Broom

North Uist
Benbecula

Harris

South Uist

Skye

Barra

Rhum

Coll
Tiree

Mull

Colonsay
Oronsay

Jura

Islay

Rathlin

Study Area
Coastal surveys sponsored by Historic Scotland
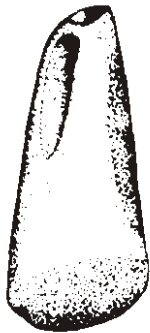Coastal survey by CMA University of Ulster
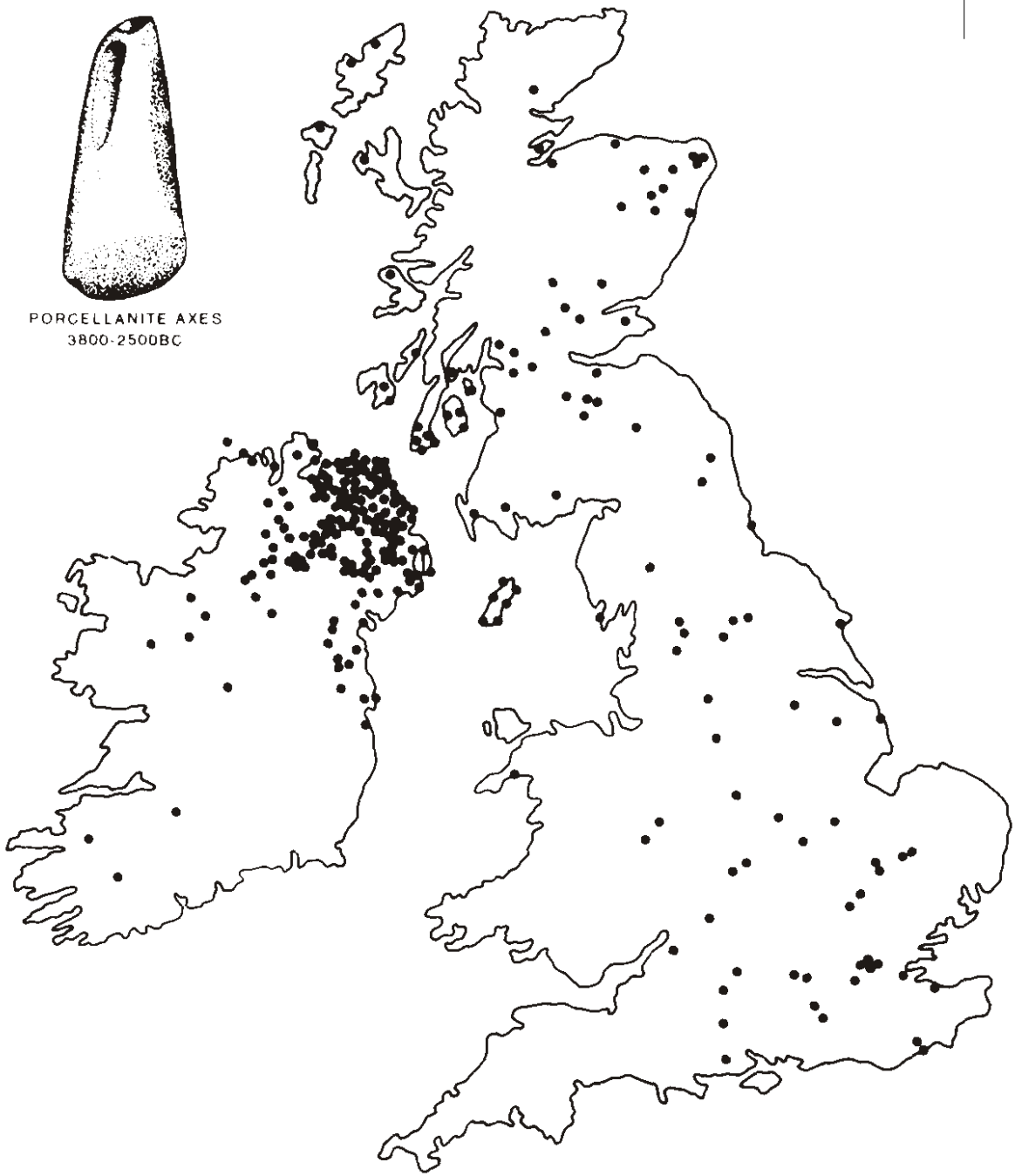Coastal survey by SOMAP

0   100km

Wessex Archaeology

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Previous investigations

Figure 3

PORCELLANITE AXES
3800-2500BC

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Distribution of porcellanite axes   Figure 4

REMAINS OF
HOLE THROUGH
UNWALE

SEC 14VII B

SEC. 14VI B

SEC 14V B

SEC 14IV B   SEC 14III B   SEC 14II B   SEC 14 I B

SEC 15

SEC 15
A

HOLE THROUGH
GUNWALE

MANMADE
INDENT

SEC 14VII A

POSSIBLE
MANMADE
CUT MARKS

SEC. 14VI A

MANMADE
INDENT

SEC 14V A

SEC 14IV A   SEC 14III A   SEC 14II A   SEC 14 I A

02E0467
GORMANSTON LOG BOAT
SCALE 1:2
PLAN # 1

SECTION
14 IV

SECTION
14 II

SECTION
14 VII

SECTION
14 VI

SECTION
14 V

SECTION
14 III

SECTION
14 I

B

A

CRACK

SLIGHT GOUGE IN

HULL AT THIS POINT

APPROX BASE OF TANK

02E0467
GORMANSTON LOG BOAT
SCALE 1:10
LONG SECTION # 15

Wessex Archaeology	Drawn by The Archaeological Diving Company Ltd 2002 This material is for client report only © The Archaeological Diving Company Ltd and Wessex Archaeology. No unauthorised reproduction.	Date: 08/03/06 — Revision Number: 0
		Scale: Not to scale — Illustrator: KJB
		Path: W:\PROJECTS\62170\Drawing Office\Report Figs\Tech report\06_03_07\Figure 5.cdr

Plan of Gormanstown logboat

Figure 5

BATTLE OF THE ATLANTIC, JUNE 1940–MARCH 1941

- ALLIED AND NEUTRAL MERCHANT SHIPS SUNK
- U-BOATS SUNK

CONVOY ROUTES, ESCORTED

"   "   , UNESCORTED

AXIS AND AXIS OCCUPIED TERRITORY, 31 MAR. 1941

MERCATOR PROJECTION

After Waddell 1991

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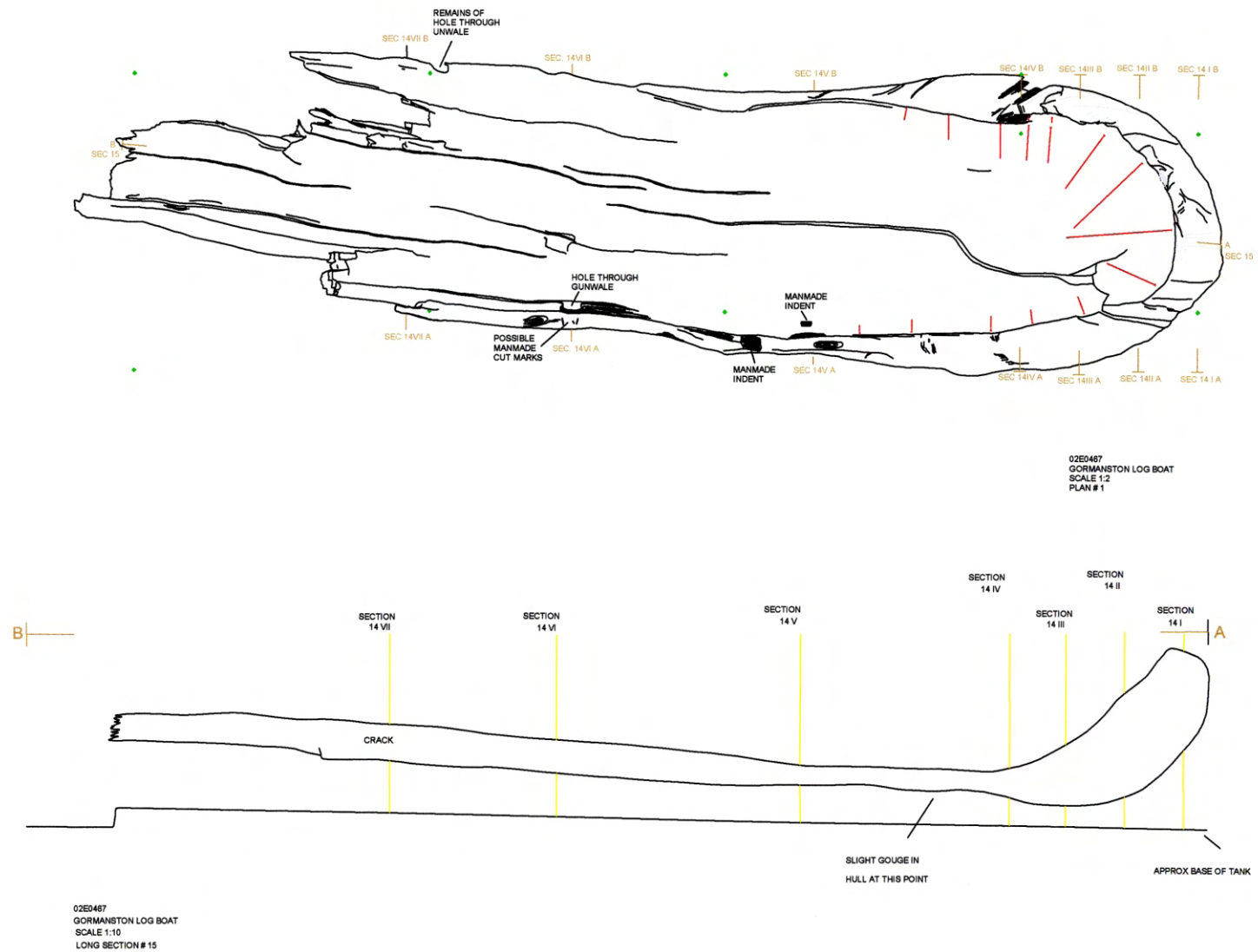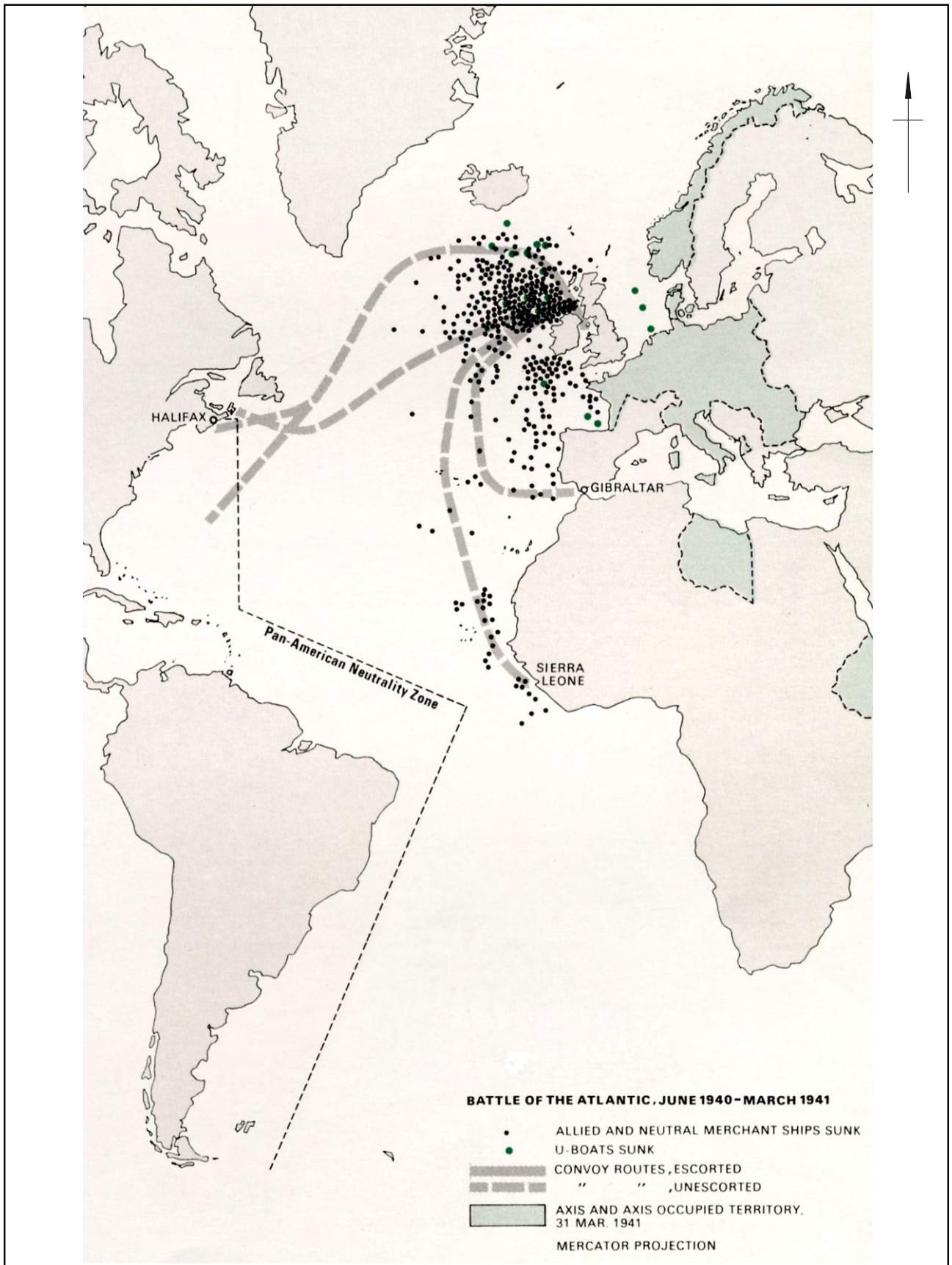| Date:	07/03/06	Revision Number:	0
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Allied and neutral merchant vessel and U-Boat losses from June 1940 to March 1941

Figure 6

Plate 1. Wreck site of *La Girona*

Plate 2. Dunluce Castle

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Wessex **Archaeology**		Path:	Y:\PROJECTS\62170\DO\RepFigs\Tech report\06_03_07\Plates.cdr		

Plate 3. Diving investigations at the *Swan* wreck site (© P. Robertson)
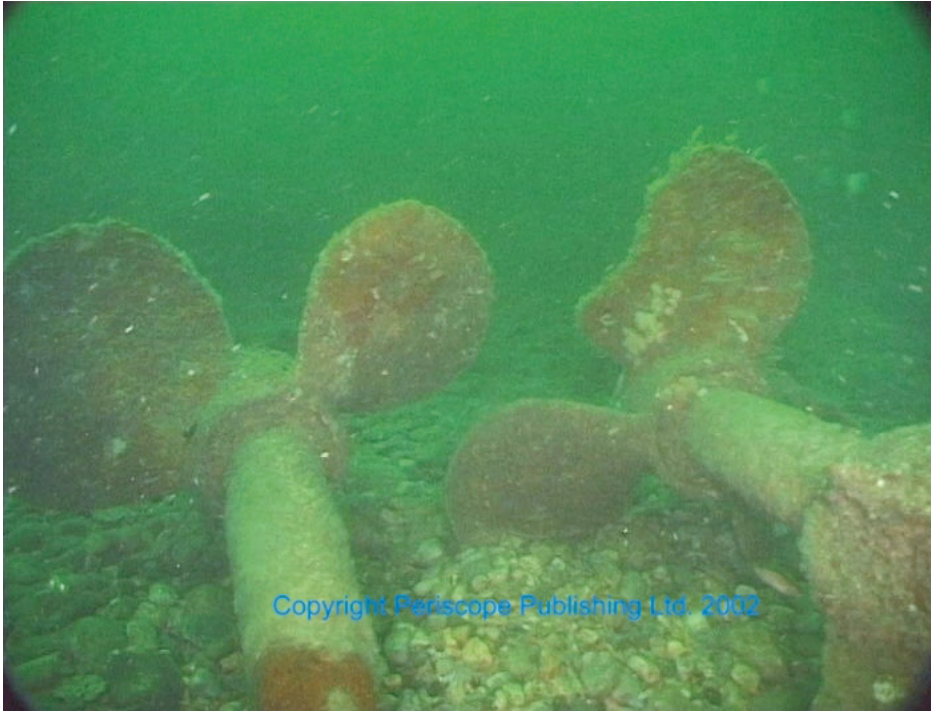
Plate 4. Twin props on the U861 wreck site,
courtesy of Innes McCartney of Periscope Publishing Ltd

Wessex Archaeology	Date:	08/03/06	Illustrator:	KJB
	Path:	Y:\PROJECTS\62170\DO\RepFigs\Tech report\06_03_07\Plates.cdr		
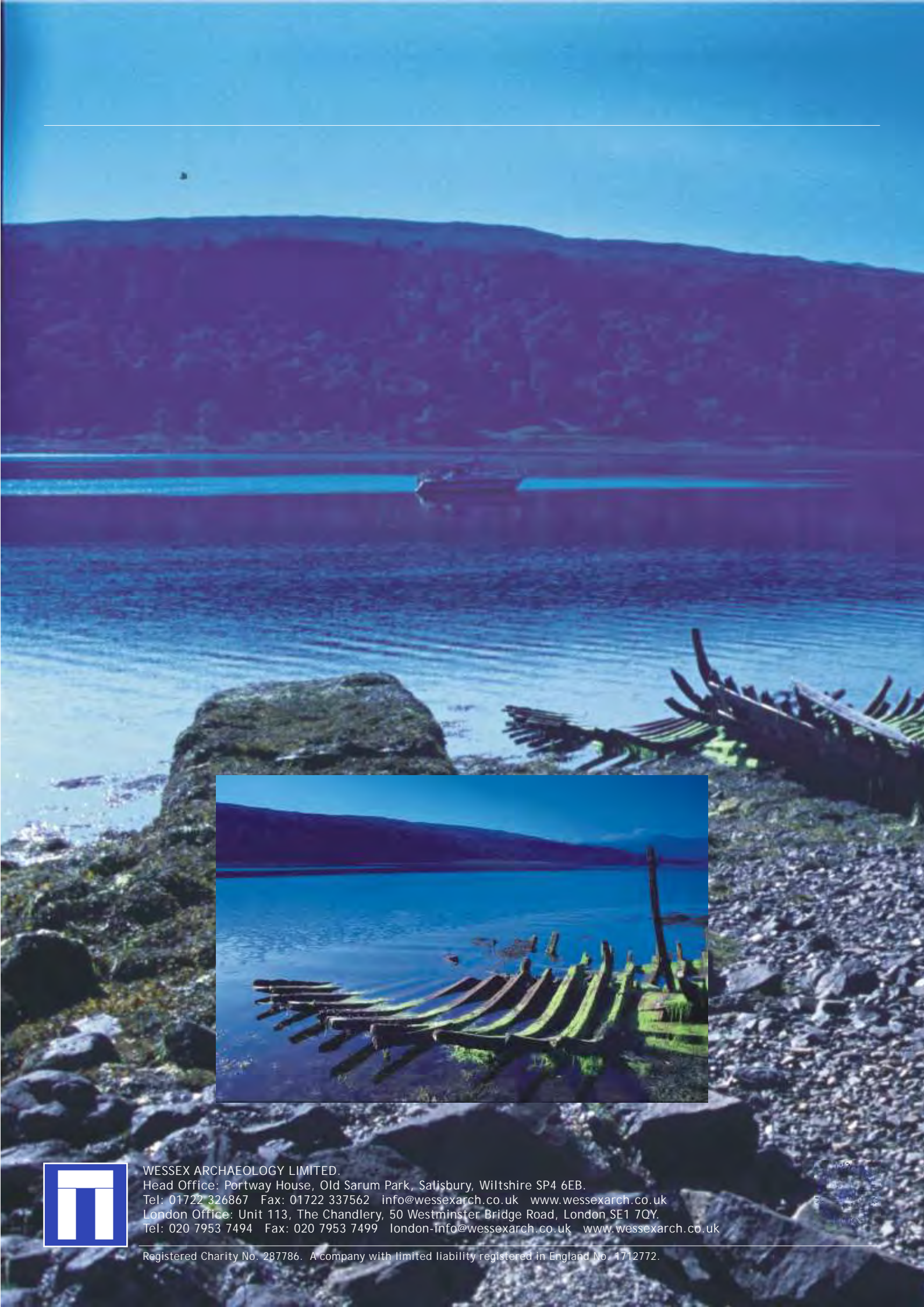
SEA 7 Maritime Archaeology
Wessex Archaeology

The study has concentrated on reviewing existing data and published sources, rather than attempt a quantitative baseline of wrecks and casualties. As well as being a considerable task in itself, the coverage of such a baseline would be limited by the available sources in respect of periods and ship types.

For the SEA 7 area the relevant Consulting Bodies (Consulting Authorities in Scotland) with regard to maritime archaeology are the Environment and Heritage Service (EHS) for Northern Ireland and Historic Scotland, who were both contacted for comment.

There is a comprehensive corpus of legislation, plans and polices concerned with the protection of the submerged maritime archaeological resource within the SEA 7 study area. At the International level, some protection is afforded by way of the United Nations Convention on the Law of the Sea 1982, the UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001, and by UNESCO World Heritage Status. In the SEA 7 area, the maritime cultural heritage around St. Kilda is currently protected as a World Heritage Site. The World Heritage Site of the Giant's Causeway and Causeway coast does not protect the maritime cultural heritage as yet, but may do so if its designation is reconsidered in the future.

At the European level, protection is afforded by the SEA Directive itself and by the Environmental Impact Assessment Directive. The UK is also party to the European Convention on the Protection of the Archaeological Heritage (Revised) 1992 (the Valletta Convention), which requires member states to institute a legal system for the protection of archaeological sites.

Across the UK there are four main pieces of legislation that can protect submerged maritime archaeological remains: the Protection of Wrecks Act 1973; the Protection of Military Remains Act 1986; the, Merchant Shipping Act 1995; and the Ancient Monuments and Archaeological Areas Act 1979 (superseded by the Historic Monuments and Archaeological Objects (NI) Order 1995) in Northern Ireland). There are currently five wrecks designated under the Protection of Wrecks Act 1973 within the SEA 7 area.

Both Scotland and Northern Ireland have their own plans and polices that protect maritime archaeology. In Scotland these include National Planning Policy Guideline 5 and 13 and Planning Advice Note 42. In Northern Ireland the Planning Policy Statement 6 can be used to deal with the protection of maritime archaeological resource.

The study has outlined the known history of maritime activity within the SEA 7 area. Despite being an extremely large body of water that at times can produce dangerous sea and weather conditions, and encompasses the rugged coastlines of western Scotland and Northern Ireland, the area has been used extensively by seafarers from at least the Mesolithic (from 9000 BC) up to present times.

During each time period there has been evidence of human activity within the SEA 7 area, often demonstrated by the discovery of maritime archaeological remains. The waters between the north east of Ireland and Scotland have been used as a means of communication throughout the centuries; at one stage the Irish kingdom of Dalriada even sat on both sides of

the North Channel. Maritime activity within the area would have started with simple log boats and hide-covered vessels, moving up to Viking clinker-built vessels and their successor, the Highland Galley.

The Dutch East India Company or Verenigde Oostindische Compagnie (VOC) frequently used the 'achter om' route to the East Indies to avoid various naval battles, English privateers and prevailing winds in the English Channel. This route would have brought their vessels across the North Sea, around Scotland and into the North Atlantic (and the SEA 7 area). As a result a number of VOC vessels, often carrying a quantity of specie, have been lost around Scotland and the Islands. One of these, the *Adelaar* lies with the SEA 7 area.

Some of the first transatlantic crossings would have traversed the study area, and with the advent of steam the shipbuilding yards of Harland and Wolf in Belfast, and those on the west coast of Scotland and in the Clyde would have added to the volume of shipping across the area.

During both World Wars, the SEA 7 area played a pivotal role in the supply of food, materials and men for the defence of Britain and the assault on Europe. The SEA 7 area was known as the North Western Approaches and was one of the main supply routes into Britain. Convoys converged in the SEA 7 area, often near the islet of Rockall and were then escorted into home waters via the bottle neck of the North Channel between Ireland and Scotland.

U-Boats were active in SEA 7 during both World Wars. During World War II U-Boats were responsible for a considerable amount of shipping losses in SEA 7 (see attached figure).
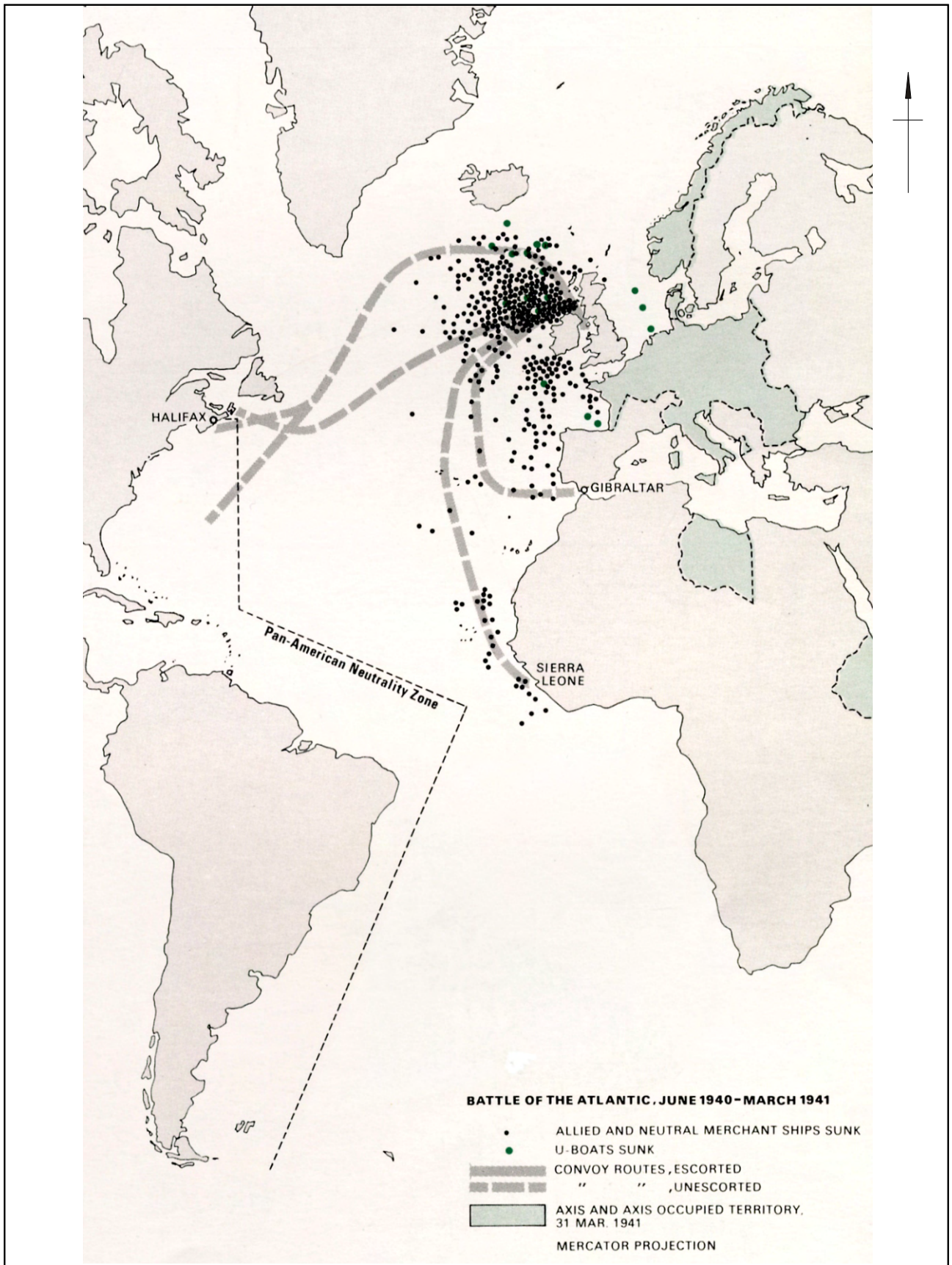
The study also addresses the potential within the SEA 7 for aircraft wrecks of historic interest. All aircraft lost in military service are automatically protected under the Protection of Military Remains Act 1986. RAF Coastal Command in particular was active in the SEA 7 area during World War II, having bases on the west coast of Scotland, in Northern Ireland, and in Iceland.

Previous investigations of maritime archaeological remains within the SEA 7 area are discussed in the report. Investigations in the area have been carried out by a number of governmental, non-governmental and voluntary organisations and individuals. The types of previous investigations range from coastal surveys like those funded by Historic Scotland, to site specific investigations of wrecks such as those designated under the Protection of Wrecks Act 1973.

The spatial distribution of submerged archaeological remains is discussed, and comments are made on the limitations of any mapped baseline of data.

The study concludes with a comment on the potential impacts of oil and gas activities on the submerged maritime archaeological resource and suggests possible monitoring methodologies.

10 October 2006

BATTLE OF THE ATLANTIC, JUNE 1940 – MARCH 1941

· ALLIED AND NEUTRAL MERCHANT SHIPS SUNK
● U-BOATS SUNK
CONVOY ROUTES, ESCORTED
" " , UNESCORTED
AXIS AND AXIS OCCUPIED TERRITORY,
31 MAR. 1941

MERCATOR PROJECTION

HALIFAX

GIBRALTAR

Pan-American Neutrality Zone

SIERRA
LEONE

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Wessex Archaeology

Allied and neutral merchant vessel and U-Boat losses from June 1940 to March 1941

Figure 6