



England's Historic Seascapes



Solent & Isle of Wight Seascapes:
Open access product & non-technical report



Solent & Isle of Wight Seascapes: why, how and what for explained

Contents

Acknowledgments	1
1. What is Seascapes?	1
From the Land to the Water - the Seascapes Concept	1
Embracing Differences	2
Why the Solent?	3
Why do we need Solent Seascapes?	4
Changing Landscapes	4
The Marine Historic Environment	5
Fact Box	5
Natural Environment	9
Modern Activity and Industry	9
Fact Box - Marine Aggregates and the Solent	10
Pressures on the Marine Historic Environment	11
2. How Seascapes can help	11
Case Study - From Points to Polygons	11
Case Study - Marine Aggregate Dredging Activity	12
3. How has Solent Seascapes been created?	13
Data Acquisition and Processing	13
Summary of Principal Data Sources	13
Developing Characterisation	13
Example Character Types Across Layers	14
Producing Seascapes Polygons	14
Example—Multi-layered Characterisation	15



Multi-Media Enhancement	16
Show me an Example of Seascapes	16
4. What will Solent Seascapes be used for and what can it do?	17
What does Solent Seascapes do?	17
Informing Marine Planning and Consents	18
Case Study—Hypothetical marina development	19
Adding to Environmental Assessments	19
Spatial Planning	19
Informing Management Plans	20
Case Study—Local Management Plans: Port and Estuary	20
Case Study—Regional Management: Input into Shoreline Management Plans	21
A Predictive Role?	21
5. Who will be interested in Solent Seascapes?	22
Potential Seascapes Users	22
Case Study—Future marine designation	22
Case Study—Dive Sites in Context	23
6. What next for Seascapes?	23
Refining Seascapes and considering use in other areas of the coast	23
Updating through changing interpretations	23
Future improvements?	23
7. Where can I find out more about Seascapes and Historic Landscape Characterisation?	24

Solent & Isle of Wight Seascapes: why, how and what for explained

Acknowledgements

Solent Seascapes is a project funded by English Heritage through the Aggregates Levy Sustainability Fund.

The Solent and Isle of Wight Pilot, one of four concurrent Seascapes Pilot Projects has been undertaken by the Hampshire & Wight Trust for Maritime Archaeology, Bournemouth University and Southampton University.

Principal project staff involved were Nicola Pee and Julie Satchell (HWTMA), Olivia Merritt (BU) and Justin Dix, Graeme Earl and Fraser Stuart (SU).

This report represents the non-technical summary of the results of the Solent Seascapes Project, further details of project methodology and results are available in the 'Solent Seascapes Technical Report'. Images within this report have been produced using data which is licensed to English Heritage and must not be reproduced without prior permission.

1. What is Seascapes?

From the Land to the Water - the Seascapes Concept

The development of the Seascapes concept has evolved from work on Historic Landscape Characterisation (HLC) in the terrestrial environment. HLC involves the broad scale analysis and interpretation of areas of landscape rather than focusing on individual sites. On land this means using a range of data sources which includes a legacy of detailed mapping which has evolved over hundreds of years which includes settlements, land use and transport routes recorded to a high degree of accuracy. Through combining this data with other sources such as Historic Environment Records, land use, place names, geology, aerial photographs and documentary sources a detailed analysis of the changing historic character of an area over time is built up. The analysis and presentation of 'time-depth' in the present landscape is based on the level and detail of available records. The result is a series of areas, or polygons, which represent similar traits or features and have been grouped as indicating of a certain type of 'character'.

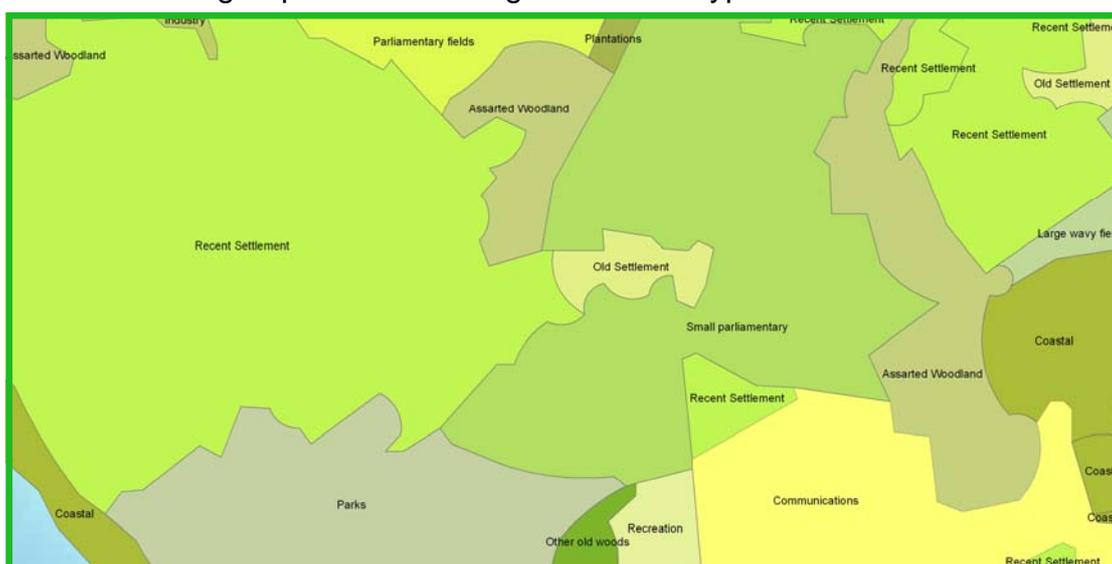


Figure 1.1 – Image showing example of an HLC area

HLC makes it possible to understand processes of human activity and impact by which the modern landscape has evolved, enabling sympathetic planning and management of future development. The process of implementing HLC in the terrestrial area has been on-going for the past fifteen years. The methodology used, types of data involved and final products were progressively developed over the initial decade, with a broad consensus reached on these aspects by 2003. Importantly the number of applications for the use of HLC in planning, management and research has also increased.

The use of terrestrial HLC to enable a broad, strategic level interpretation of the character of the landscape and resulting use in management are important factors driving the application of the HLC concept to the marine zone.

In comparison to knowledge of the historic resource and management frameworks for the terrestrial environment, the marine environment is following a long way behind. For many years 'maritime archaeology' has been seen as separate within research and management fields and has not been well integrated with the terrestrial historic environment. In 2002 English Heritage took over management responsibility for the marine historic environment and began to develop new approaches and initiatives. The Seascapes projects fall within this suite of projects. English Heritage are working in conjunction with the Aggregates Industry, whose offshore operations have the potential to impact the historic environment, to better understand the cultural resource, impacts upon it and ways to minimise impacts. To facilitate this process the Aggregates Levy Sustainability Fund (ALSF) has been established, this fund has enabled the Solent Seascapes project to be undertaken.

Embracing Differences

The application of the process of Historic Landscape Characterisation to the marine zone has required some adaptation and development of new methodologies.



Figure 1.2 – Example of a terrestrial area showing detailed pattern of settlement and land use



Figure 1.3 – Example of a marine area showing the uniformity of the modern sea view

In the marine environment we do not have such detailed 'maps' to work with, instead we have a range of marine 'charts'. These are produced primarily to ensure safe navigation for ships and boats, they do not reflect the development of human impact on the marine landscape in the same way that maps do on land. However, in recent years there have been a number of other marine 'mapping' initiatives which consider different types of habitats or industrial uses of areas of the seabed.

Our level of knowledge of the marine cultural heritage that lies on the seabed is also not as comprehensive as that on land. Although there are marine Historic Environment Databases, the detail and accuracy of data within these is often inconsistent. Most such records relate to shipwrecks and maritime losses and are only just beginning to incorporate aspects of the cultural heritage which recognises that the area that is now seabed has not always been 'marine' and vast areas that are now under the sea were once dry land used by our prehistoric ancestors.

Although our knowledge of the marine environment is constantly improving at the same time human use of the seas for development, transport and recreation is increasing. These activities, along with natural forces, such as climate change and coastal erosion, there are increasing pressures on the marine environment from beneath the seabed right up to the water surface.

Seascapes provides a way to bring together in an area based, digital format a diverse range of datasets that are available in the marine zone to provide an interpretation of the modern marine historic landscape, but also recognise previous 'seascapes'. This interpretation develops 'Character Areas' that provide a more broad interpretation of historic development and change that can be used to help with management, planning and research.

EH commissioned the first trial of adapting HLC to the marine zone in Liverpool Bay. This project helped develop ways of creating 'Seascapes', it highlighted the potential of the method while also highlighting challenges in terms of the differences between the terrestrial and marine environments. However, encouraging initial results led to the commissioning of four further pilot areas around the English coast. These were needed to further refine and test the Seascapes methodology on areas demonstrating a greater range of physical and cultural circumstances from those of the initial pilot area.

Why the Solent?

The Solent and Isle of Wight pilot area has been selected as it has been recognised as being of high potential and significance for its marine cultural heritage of all types. It is also an area that is one of the busiest sea areas around the coast due to shipping, recreation and leisure. Its natural resources, such as marine aggregates and shell fish also increase use of the area and add to pressures to manage such activities in a way that is sympathetic to the marine cultural heritage.

The Solent study area stretches from Durlston Head, Dorset, to Selsey Bill, West Sussex, incorporating the Isle of Wight, this includes around a 150 mile stretch of the coast. To make sure that the Solent Seascapes characterisations had over lap with the terrestrial HLC a 2km landward buffer was applied to promote a 'seamless' approach to the Historic Environment. The marine area extended from the four counties offshore up to the median line with France.

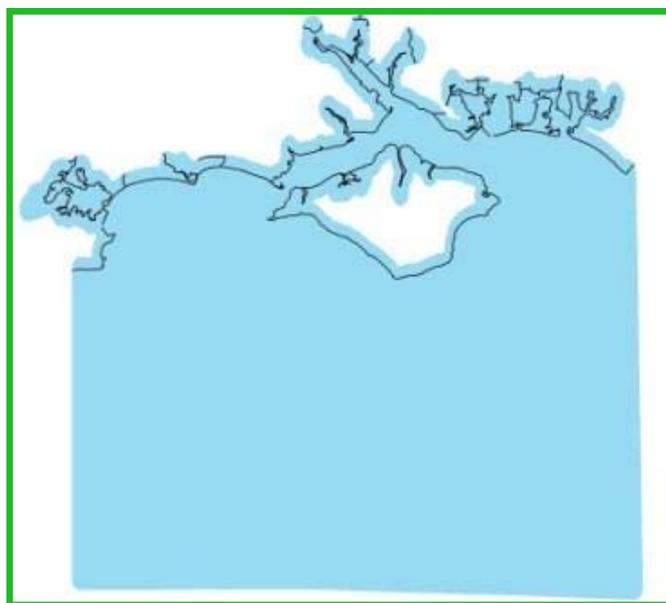


Figure 1.4 – Solent Seascapes Study area

Why do we need Solent Seascapes?



The modern day Solent coastline and Sea Wight area is a diverse and dynamic landscape. Here a busy modern port can lie over and alongside prehistoric occupation evidence (figure 1.5). In comparison to some areas of the English coast we know quite a lot about the archaeological potential of the Solent area, however, due to modern pressures of activity, development and sea level changes we need more effective ways of managing change in the marine environment. Seascapes can provide a tool to help achieve this.

Figure 1.5 – Trackways, believed to be Bronze Age, and the modern port of Southampton

Changing Landscapes

The geographic setting of the Solent as a sheltered waterway means it is an attractive area for human settlement. This has been the case since prehistoric times when sea level was lower. The Solent channel is the drowned valley of a great river which once flowed between the mainland and the Isle of Wight (Figure 1.6).



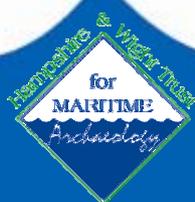
Figure 1.6 – Reconstruction of the course of the Old Solent River (HWTMA)

Although the Solent river valley has been submerged by rising sea levels at following end of the last Ice Age, its former extent can still be seen both in charted bathymetry and the submerged river terrace sediments recorded in the area. Remnants of the chalk basin can be seen most dramatically in features like Old Harry Rocks at Swanage, the eroded remains of the barrier that once stretched to the Needles on the Isle of Wight and formed the Solent river valley. Parts of the current landscape include layers of gravel and other material left by the Old Solent River and its tributaries.

The intertidal area of the modern Solent is characterised by a variety of features that include: shingle, sand spits, beaches and sub-tidal shoals which periodically dry at low water spring tides.



ENGLISH HERITAGE



National Oceanography
Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

However, the most visible features are the numerous channels, inlets, and estuary features which characterise the Solent and Wight region (Figure 1.7).



Figure 1.7 – Portsmouth Harbour and approaches as viewed from the Portsmouth Tower

The Marine Historic Environment

It is into this setting of changing landscapes that human populations have lived, migrated, settled and developed centres of occupation. From prehistoric times humans have exploited the natural resources and geographic setting of the Solent. This has left traces in the archaeological record which indicate the character of human activity and use of this area – see fact box.

FACT BOX

Our knowledge of coastal and marine cultural heritage is constantly developing. Just a few examples of the important marine cultural heritage resource in the Solent include:

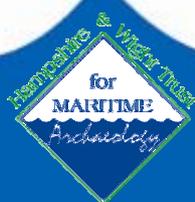
Prehistoric Landscapes & Occupation: The earliest evidence of human occupation of the area dates back to the Pleistocene. These finds date to times of lower sea-level, when vast areas which are now submerged were dry land. The size of the land mass available to early humans changed with climatic conditions. During the last Ice Age Britain was not totally covered by ice, leaving what is now the south coast as tundra. As the climate warmed humans re-colonised Britain, which was then part of the European landmass (figure 1.8).



Figure 1.8 – Britain as part of Europe during times of lower sea level



ENGLISH HERITAGE



National Oceanography Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

As sea levels continued to rise the location of the coast gradually regressed towards the modern day position. Rising seas covered areas used for occupation with layers of silt, entombing them within the seabed sediments. These remains of prehistoric peoples can be found across the Solent region being eroded by tidal movements or exposed dynamic coastal locations. Some of the earliest remains yet discovered are at Bouldnor Cliff of the North West coast of the Isle of Wight where hearths, flint tools and food remains such as charred hazelnuts have been located (Figure 1.9).



Figure 1.9 – Bouldnor Cliff Mesolithic Finds

Often closer to the modern shore line are peat deposits capping prehistoric landsurfaces dating to the Neolithic and Bronze Age periods (Figure 1.10). On these landsurfaces a wide range of occupation evidence is found including track ways and fish traps which show how marine resources were being exploited. These well preserved organic remains provide us with types of evidence of how our prehistoric ancestors lived that are rarely preserved on land, demonstrating the importance of marine and waterlogged deposits.



Figure 1.10 – Auger full of peat from the Hamble River intertidal

Historic Occupation: Settlers have come to the area, conveyed using watercraft through the Iron Age, Roman, and Medieval periods up to the present day. Proximity to mainland Europe, frequent natural sheltered harbours and anchorages, together with the navigationally advantageous long high-water stand and the natural protection provided by the Isle of Wight, mean the area was strategically well placed for settlement, trade and subsequent port development.



ENGLISH HERITAGE



National Oceanography
Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

The establishment of ports has influenced the maritime-dominated development of the area. These centres are primarily for trade, although many are also in proximity to substantial marine resources such as fishing grounds and aggregate deposits. Portsmouth Harbour has been the 'home' of the navy for many centuries, recognising the need for the defence of the English Channel and beyond.

The infrastructure to support maritime trade, transport, defence and industries is diverse. This means that the maritime 'influence' can often reach considerable distances in land, whether through direct transport via tidal rivers and waterways or indirectly through the supply of goods or services.

Shipwrecks: For many centuries ships represented the pinnacle of technology within society. They provided the means to transport goods and people locally, nationally and internationally, and to defend the country and other territories. In the Solent area we have a wealth of watercraft remains, some are abandoned on the foreshore, while others are the result of more dramatic wrecking events. Remains dating from the early Saxon period (figure 1.11) through to the Second World War (figure 1.12) are represented in the region.



Figure 1.11 – Langstone logboat



Figure 1.12 – 2nd world war wreck – the Borgny

Seven wrecks are Designated Protected Wreck Sites, which have been recognised as being of national importance. These include the Grace Dieu (1439) (figure 1.13), Mary Rose (1545), Yarmouth Roads Wreck (16th Century), Hazardous (1706), Invincible (1758), Needles (including the Assurance (1753) and Pomone (1811) (figure 1.14) and A1 (1911). Six of these seven sites represent the remains of ships built for warfare and defence, with only the Yarmouth Roads wreck believed to be a trading vessel of Spanish origin.



Figure 1.13 – Grace Dieu





Figure 1.14 – Needles wreck site

These seven sites represent a minute fraction of the thousands of ships recorded as having been lost within the Solent Seascapes area. Each site has a unique story to tell, to contribute to the knowledge of our maritime past.

Coastal Archaeology: The productive nature of the coast and its resources has ensured that a legacy of archaeological remains from inter-tidal industries can now be found around our shores. Some industries such as salt making and shell fisheries date back to prehistoric times with evidence from the Iron Age and Roman period being relatively common. Many other industries such as pottery, brick and tile making utilise natural clay deposits situated

in the coastal zone, they then benefit from being able to export their goods by water.

Shipbuilding has been a prominent local industry, again linked to the strong maritime character of the region. Although we have evidence that Roman trading craft were plying the Solent waters we are yet to find a shipbuilding site, however, later in the Medieval, Post Medieval and Modern periods there is substantial evidence of such sites (figure 1.16).



Figure 1.15 Post Medieval oyster beds in Chichester Harbour



Figure 1.16 Bucklers Hard shipbuilding site



In summary there are very few areas of the Solent coastline that have not been impacted by coastal industries and activities, many areas which now appear to be quite backwaters were once bustling with activity (figure 1.17).

Figure 1.17 Dock Copse

Natural Environment

In addition to the cultural heritage the natural heritage of the Solent is also very significant with a large number of marine and inter-tidal environments being recognised through local, national and international designations, such as:

- Ramsar and Special Areas of Conservation (SAC) designated areas
- Special Protection Area (SPA)
- Solent European Marine Sites (SEMS)
- Heritage Coast
- New Forest National Park
- Solent Sites of Specific Interest (SSSI)

Additionally mudflats, sandflats, shingle spits and beaches support a varied and rich plethora of waterfowl and other marine resources such as shellfish.

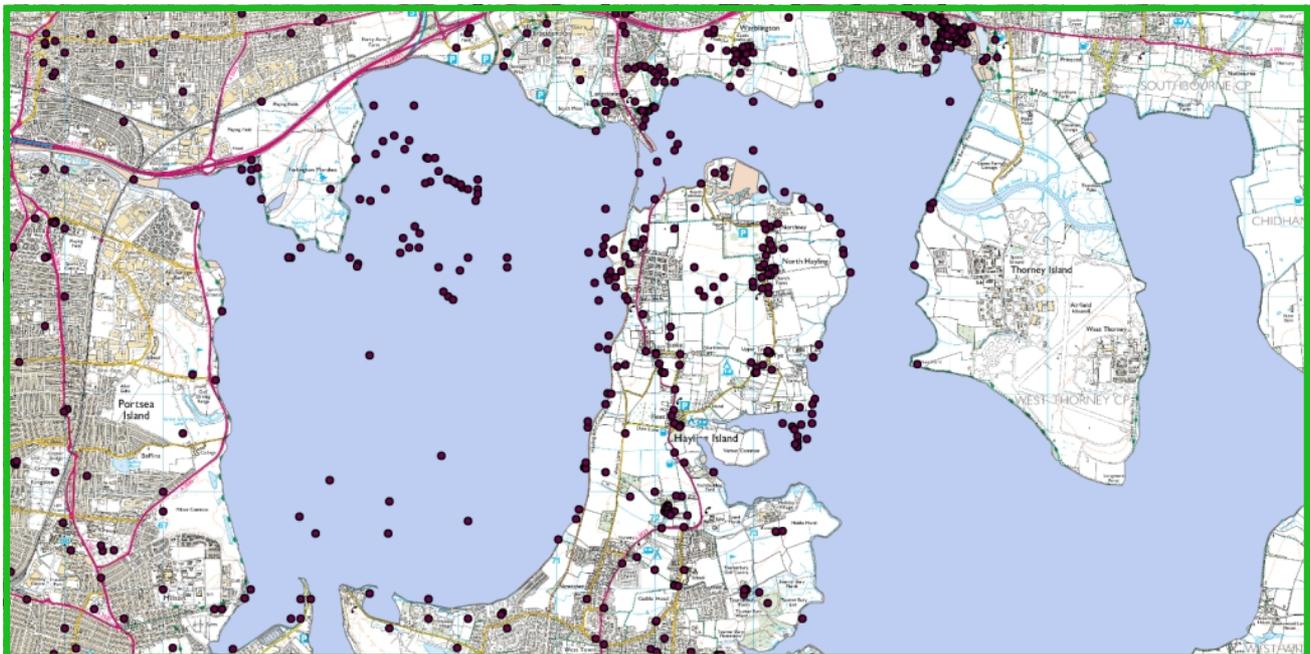


Figure 1.18 – Image showing nature designation in relation to known archaeological sites

Modern Activity and Industry

A wide variety and diversity of marine-related industries have developed within the Solent and Sea Wight area. Some of the most prominent examples are ports, marine aggregates extraction (see Fact Box), oil installations, commercial fishing, capital and maintenance dredging operations

and shipping trade. Modern industries that are served by coastal traffic, such as the harbour at Cowes, have affected the physical appearance of the coastal and marine zone (Figure 1.19). Marina development has affected many of our tidal estuaries and harbours, two prominent rivers for yachting activity are the Lymington and Hamble Rivers. The Solent area also has facilities for both the commercial and recreational fishing industry. It has the largest native oyster fishery in the UK, various designated shellfish waters, bass nurseries and commercial fisheries. The high volumes of marine-related activity is distinctive to the Solent region and contributes substantially to the historic and modern character of the region.



Figure 1.19 – The harbour at Cowes

FACT BOX - Marine Aggregates and the Solent

A prominent marine industry in the Solent region is aggregate dredging (figure 1.20). On a national scale marine aggregates contribute:

- 21% of the sand and gravel needs of England and Wales
- 33% of the South East's sand and gravel

And in the Solent (figure 1.21):

- Landings of marine aggregates in the Solent average 1.5 million tonnes per annum.
- Consumption of marine dredged aggregates on the Isle of Wight is around 115,000 tonnes per annum



Figure 1.20 – Aggregates dredger at work (BMAPA)



Figure 1.21 – Distribution of Aggregates Dredging Areas in the Solent

Aggregates dredging has the potential to adversely impact the marine historic environment as it is an intrusive activity. However, a productive relationship between the aggregates industry and heritage agencies ensures best-practice is followed and promoted to minimise impacts on heritage.

Pressures on the Marine Historic Environment

The cultural, economic and leisure features of the Solent and their close interplay with the natural environment make it an attractive place for people to live. However, this all combines to make a marine and coastal landscape that is facing a number of human and natural pressures, including erosion, climate change, development, extraction and recreation. All these pressures require sympathetic management to ensure a balance between development and conservation of the historic environment is achieved.

2. How Seascapes can help

Seascapes is not about stopping change or development of the marine historic landscape, it is about informing the management of change in a way that takes account of historic development and its traits which are distinctive to any particular area.

Seascapes is an opportunity to move towards an area based perspective through taking another look at marine data. Most of our current knowledge of the marine historic environment is based on 'point data' such as specific points where a shipwreck lies, or a bronze age sword was recovered, and doesn't take into account how different points might be related to each other, or have over time combined to make a wider area of the seascape significant as it displays the same traits or traces that give it distinctive 'character'. Neither does such point data generally convey the typical historical development of an area, given their focus on the special, atypical or rare.

Case Study - From Points to Polygons

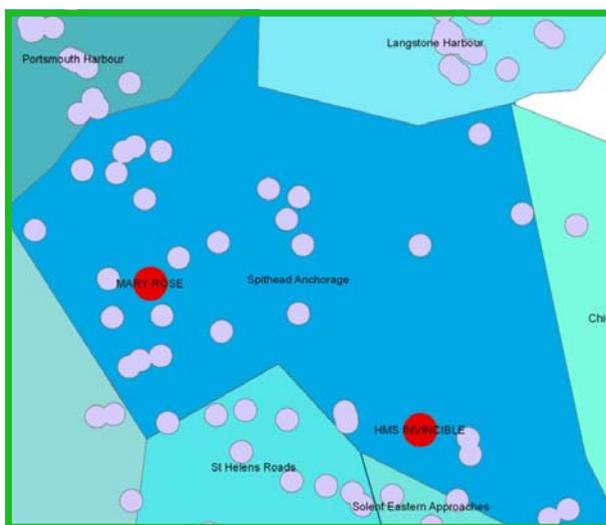


Figure 2.1 – The protected wreck site of the *Invincible* and surrounding wreck sites within the 'Spithead Anchorage' Seascape area

Seascapes is about taking another look at what we know about marine cultural heritage in order to make the most of the data. Current Historic Environment Records are often based on what is known as 'point data', these points record individual sites, finds or work locations. Looking in depth at a point can reveal lots about, for example, an individual shipwreck. Through Seascapes we move away from looking at just individual 'points' to looking at areas or 'polygons' which take in a whole range of data which includes points, but also a lot of other information about the nature and activities below the current seabed, the seabed surface and water column and the water surface.

For example, it is possible to look at the protected wreck site of the *Invincible* in the Eastern Solent as an important case study as it is one of only 58 designated historic wreck sites in the whole of the UK. But through Seascapes we can see that the *Invincible* is only one of a large number of known shipwrecks that lie in an area which has been a

navigational hazard for many centuries, this is also adjacent to the modern shipping channel that witnesses a high density of marine traffic. These features are all within the 'Spithead Anchorage' Seascapes polygon. This example highlights how the survey of frequently-used shipping channels over the past three hundred years has led to the charting of such a high number of shipwrecks. It is the regularity and coverage of the marine surveys undertaken that has developed our knowledge of shipwreck sites; areas not as frequently surveyed may contain just as many shipwreck sites, but they just haven't been discovered yet.

Seascapes can also help promote a seam-less approach to the historic environment whether it happens to be on land or at sea. This is one resource, it should not be considered as 'separate' or 'different' as it is covered by water. Seascapes is an important tool which can be used in a range of marine management situations, it can help facilitate an integrated approach to spatial planning (see case study), provide context to inform curatorial decisions and highlight research or data gathering priorities for the future. Such seam-less management is becoming increasingly focused on due to the development of broader management frameworks for integrated coastal zone management (ICZM) and Marine Spatial Planning. Having area-based data can ensure the historic environment is given full consideration alongside other environmental and commercial concerns.

Case Study - Marine Aggregate Dredging Activity

There are many human and natural activities and processes that can have an effect on the marine historic environment. To ensure that important elements of our national heritage are considered and safeguarded there are a variety of management approaches that are used.

When a dredging company would like to extract aggregates from the seabed a licence is required. To get a license a process of Environmental Impact Assessment is required, which includes and assessment of marine cultural heritage. At the moment this process looks at all available data, which is usually in 'point' format to assess both the known and potential archaeological remains within a proposed dredging area. While Seascapes does not change the requirement to undertake this assessment, it does add a new perspective to data gathered for and individual license area by providing a broader view of the character of the historic 'seascape', the typical historical development of the area concerned, and the range of feature-survival that might be expected as a result. This helps make more informed decisions on which areas around our coast should be used for dredging activity.

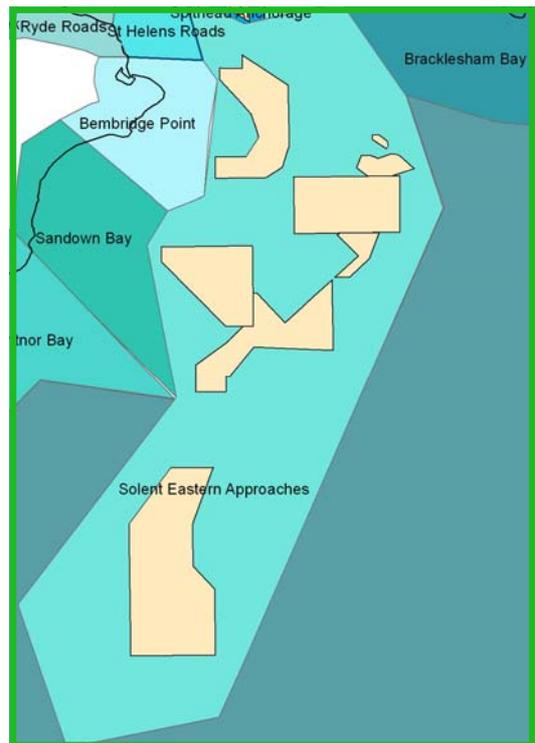


Figure 2.2 – Figure showing dredging area outline within Seascapes polygon



3. How has Solent Seascapes been Created?

The project has involved several stages which have included data gathering, analysis using GIS to enable a multi-level approach to Seascapes and interpretation to build a final 'broad character' layer. The development of a multi-level approach to Seascapes was needed to reflect the full three dimensional character of the marine zone.

Data Acquisition and Processing

The first stage of the project was to gather digital datasets from the marine environment to assess their potential to inform the characterisation of the historic environment.

Summary of Principal Data Sources

The National Monuments Record - provided named location and known wreck data, in addition to also historical port and dock locations and significant archaeological point locations.

SMR's/HER's - provided data on the coastal and onshore archaeological resource, much of which was related to marine character types and activities.

Terrestrial HLC polygons - were analysed and those connected to the marine zone and within a 2 km landward buffer, were selected for incorporation into the project GIS.

Data from SeaZone - has provided additional data on wrecks and obstructions, as well as extensive information on industrial activities: dredging areas, offshore oil installations, protected areas, and also provided locations of military practice areas, and of course bathymetric data.

Ordnance Survey maps - were analysed to show landscape regression and changes in the dimensions of the marine/ shore interface.

Solent Hazards Project – the results of an ALSF-funded project mapping well known navigational hazards against seabed preservation potential have been incorporated into the Seascapes interpretation.

Historic Charts – these provided data on coastal and offshore changes and factors affecting navigation in previous periods.

Salt industry mapping – a project by Hampshire County Council mapped the evidence of areas used in the salt-making industry.

Shell-fishing zones – mapping of areas used by the industry have contributed to understanding the distribution of modern fishing.

Data on prehistoric landscapes – information from geophysical survey data, borehole and auger evidence and results of diver and inter-tidal investigations have been combined to provide mapping of known prehistoric landscape survival. While it is acknowledged that this data is representative of only a fraction of the potential resource, it provides an indication of where the presence of material has currently been confirmed.

Developing Characterisation

The project then involved identifying historic attributes of the marine environment from available digital data sources. This included elements of the historic and natural environment. The attributes were then grouped to develop of a set of Seascape Broad Character Types. Within these Broad Character Types there were further sub-divisions.

The Solent Seascapes project has eight Broad Seascape Character Types and twenty one Sub-Character Types. It is likely that all of the Seascapes pilot projects may have similar character types, but the diversity of sub-character types will depend on the form of the local marine historic environment.

After the analysis of data and development of Character Types it was realised that to represent the full interpretation of the marine historic environment of the Solent further divisions of data would be required. The multi-level Seascape was developed based on a stratified GIS.

This meant that datasets were further grouped into 4 levels:

Sea Surface

Seabed surface

Seabed subsurface

Coastal

This enabled recognition that some attributes and activities may occur in multiple levels, while others would only be in one.

Example Character Types Across Layers

Activity with multi- level representation = Aggregates dredging

This activity is represented within all four character layers. On the sea surface the dredging vessels travel from wharves to extraction areas. On the seabed surface and in the water column the dredging apparatus is deployed while extracting. The seabed subsurface is also impacted due to the removal of aggregate material. In the coastal zone dredged aggregates are used for beach replenishment and recharge.

Activity with single level representation = prehistoric landscapes

Prehistoric landscape deposits are mostly represented in the seabed subsurface level. Many of these deposits have become sealed by sediments during the process of sea level rise and are now preserved within the seabed.

If you would like further details of all the different character types involved in the Solent Seascapes project please see Appendix 10.3 of the 'Solent Seascapes Technical Report'.

Producing Seascapes Polygons

With the fully developed four levels of character types within the project area we then moved on to the analytical process of combining the data within the four levels to produce the top level 'Seascapes' product.

The broad characterisation of Solent Seascapes areas involved the assessment of data from all four levels in the subjective process of creating broad polygons. Each of the polygons is accompanied by a description which reflects the data from all four Seascape levels (see example over page).

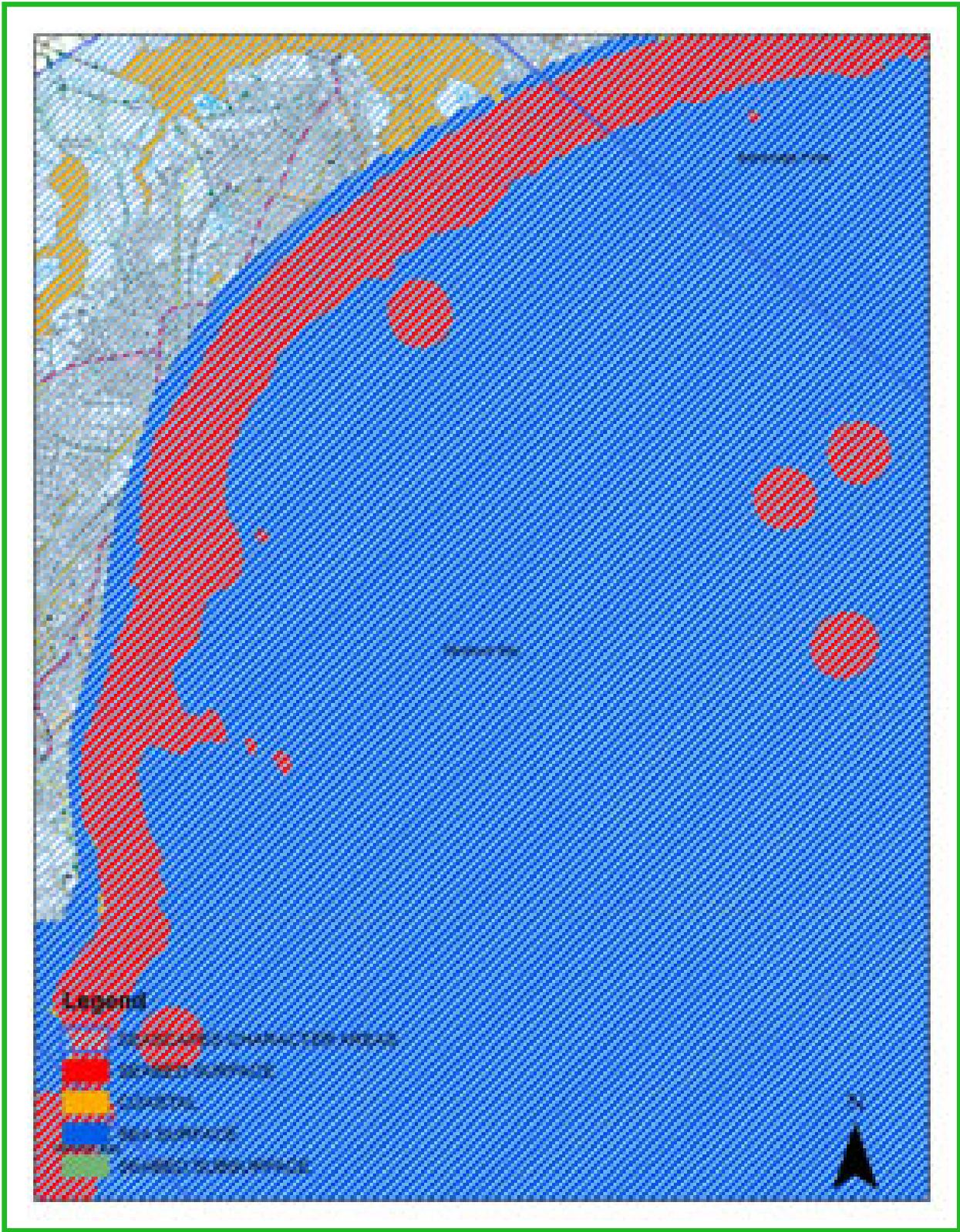


ENGLISH HERITAGE

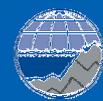


**National Oceanography
Centre, Southampton**
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

Example - Multi-layered Characterisation



ENGLISH HERITAGE



National Oceanography Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

Multi-Media Enhancement

To accompany the final broad character polygons and descriptions a multi-media element has been developed which integrates into the final product images from the Solent Seascapes and references to where you can find out further information.

Show me an Example of Seascapes

So, what does the Solent Seascapes product look like and how easy is it to use? This example of using Seascapes shows you what to expect.

Step One - Entering the Seascapes Product

The 'front end' of Solent Seascapes looks like this. You see the whole of the region split into colour coded areas. To look in detail at a particular area click on the polygon.

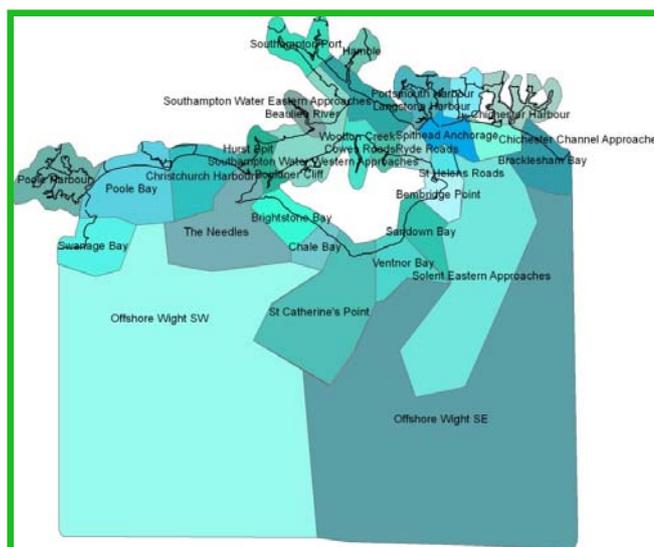


Figure 3.1 – The 'front end' of Seascapes product

Step Two – Viewing Information

You have entered a particular Seascapes area and a document has appeared which includes:

Text Description – this text has been created using data from the four different Seascapes layers, it will reflect both the modern and past use of the area and the range of archaeological and historical features found within it.

Langstone Harbour

Summary Description
Langstone Harbour is the central of the three major harbours of the Eastern Solent. Lying to the east of Portsmouth modern activity is dominated by vessel activity from fishing, military training and pleasure craft. In the inter tidal margins and beneath the current water level the remains of many archaeological sites are preserved, these include prehistoric forest remains and peat deposits, a wealth of stone tools finds, bronze age settlement and burial remains, Roman pottery and salt working evidence, saxon watercraft and fishing related structures and a number of more modern shipwreck sites.

Sea Surface
The Harbour encompasses some 23km² and is situated between Portsea and Hayling Islands. Activity on the sea surface is dominated by commercial shipping. The presence of two aggregate wharves: Kendall's Wharf and Bedhampton Wharf, within the harbour, make it a busy commercial area. The entire inlet is designated for use as a military practice area, and consequently features frequent naval vessels and activity. A small local fleet of commercial fishing vessels still operates out of the port, providing local industry. A local ferry crossing connects the mainland to Hayling Island. The harbour is a popular site for marine recreation activities, most notably sailing, windsurfing, and water-skiing.

Seabed Surface
The entrance to Langstone Harbour has two long curving shingle spits. East Winner, an offshore sand bank at the mouth of Langstone and Chichester Harbours has been dredged for aggregate extraction (Future Coast, 2002). Within the Harbour itself there are very extensive intertidal mudflats and salt marshes, especially surrounding the numerous small islets. The sediments become sandier near the

Figure 3.2 Example extract Seascape polygon text description



ENGLISH HERITAGE



National Oceanography Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

After the analysis of data and development of Character Types it was realised that to represent the full interpretation of the marine historic environment of the Solent further divisions of data would be required. The multi-level Seascape was developed based on a stratified GIS.

This meant that datasets were further grouped into 4 levels:

Sea Surface

Seabed surface

Seabed subsurface

Coastal

This enabled recognition that some attributes and activities may occur in multiple levels, while others would only be in one.

Example Character Types Across Layers

Activity with multi- level representation = Aggregates dredging

This activity is represented within all four character layers. On the sea surface the dredging vessels travel from wharves to extraction areas. On the seabed surface and in the water column the dredging apparatus is deployed while extracting. The seabed subsurface is also impacted due to the removal of aggregate material. In the coastal zone dredged aggregates are used for beach replenishment and recharge.

Activity with single level representation = prehistoric landscapes

Prehistoric landscape deposits are mostly represented in the seabed subsurface level. Many of these deposits have become sealed by sediments during the process of sea level rise and are now preserved within the seabed.

If you would like further details of all the different character types involved in the Solent Seascapes project please see Appendix 10.3 of the 'Solent Seascapes Technical Report'.

Producing Seascapes Polygons

With the fully developed four levels of character types within the project area we then moved on to the analytical process of combining the data within the four levels to produce the top level 'Seascapes' product.

The broad characterisation of Solent Seascapes areas involved the assessment of data from all four levels in the subjective process of creating broad polygons. Each of the polygons is accompanied by a description which reflects the data from all four Seascape levels (see example over page).

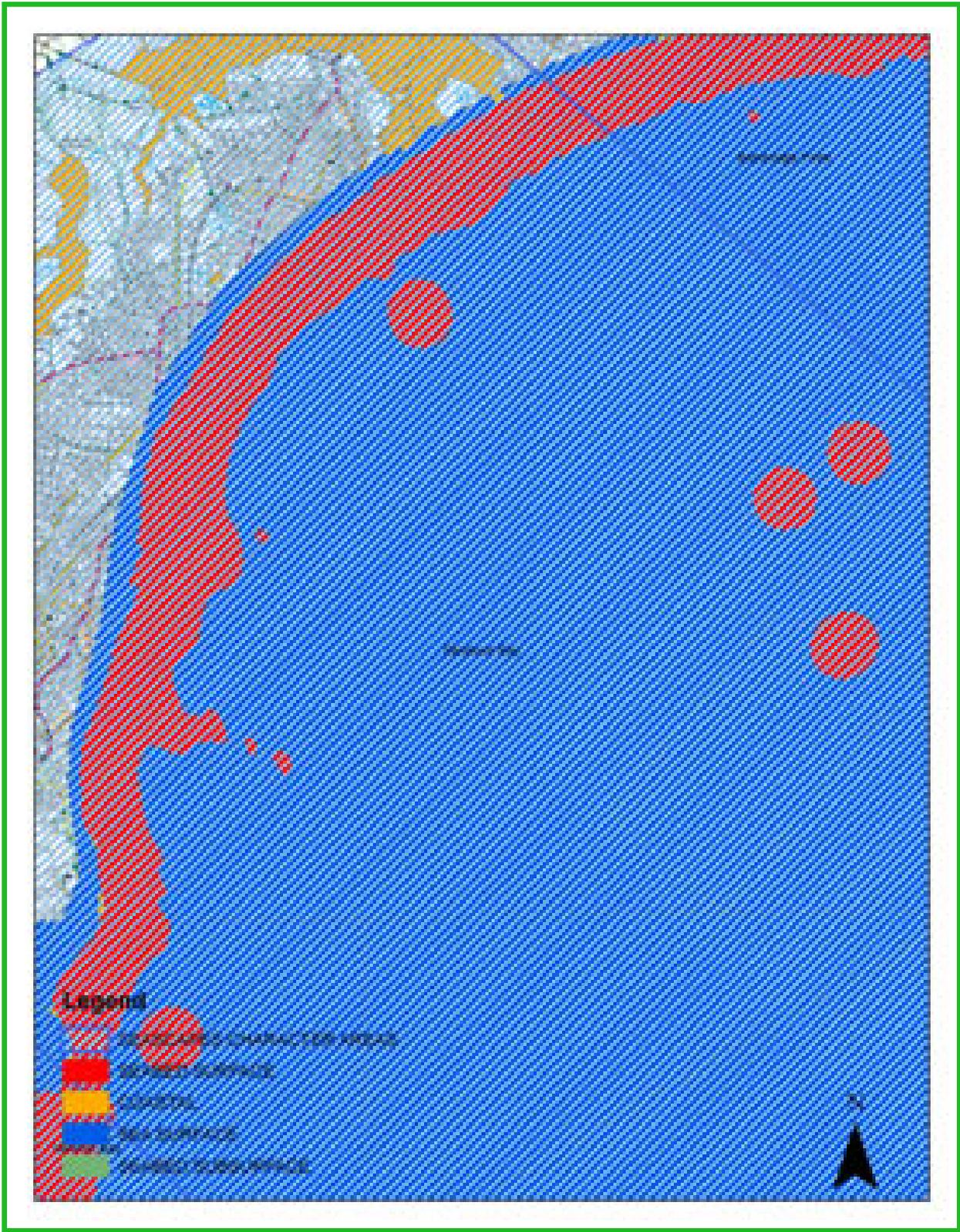


ENGLISH HERITAGE



**National Oceanography
Centre, Southampton**
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

Example - Multi-layered Characterisation



Multi-Media Enhancement

To accompany the final broad character polygons and descriptions a multi-media element has been developed which integrates into the final product images from the Solent Seascapes and references to where you can find out further information.

Show me an Example of Seascapes

So, what does the Solent Seascapes product look like and how easy is it to use? This example of using Seascapes shows you what to expect.

Step One - Entering the Seascapes Product

The 'front end' of Solent Seascapes looks like this. You see the whole of the region split into colour coded areas. To look in detail at a particular area click on the polygon.

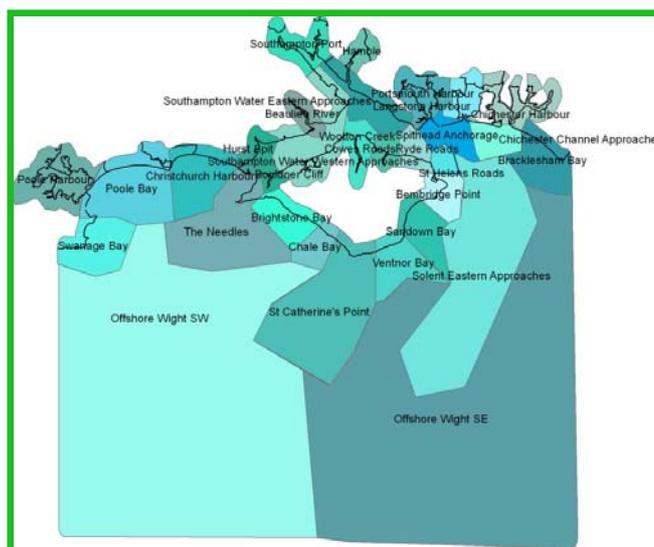


Figure 3.1 – The 'front end' of Seascapes product

Step Two – Viewing Information

You have entered a particular Seascapes area and a document has appeared which includes:

Text Description – this text has been created using data from the four different Seascapes layers, it will reflect both the modern and past use of the area and the range of archaeological and historical features found within it.

Langstone Harbour

Summary Description
Langstone Harbour is the central of the three major harbours of the Eastern Solent. Lying to the east of Portsmouth modern activity is dominated by vessel activity from fishing, military training and pleasure craft. In the inter tidal margins and beneath the current water level the remains of many archaeological sites are preserved, these include prehistoric forest remains and peat deposits, a wealth of stone tools finds, bronze age settlement and burial remains, Roman pottery and salt working evidence, saxon watercraft and fishing related structures and a number of more modern shipwreck sites.

Sea Surface
The Harbour encompasses some 23km² and is situated between Portsea and Hayling Islands. Activity on the sea surface is dominated by commercial shipping. The presence of two aggregate wharves: Kendall's Wharf and Bedhampton Wharf, within the harbour, make it a busy commercial area. The entire inlet is designated for use as a military practice area, and consequently features frequent naval vessels and activity. A small local fleet of commercial fishing vessels still operates out of the port, providing local industry. A local ferry crossing connects the mainland to Hayling Island. The harbour is a popular site for marine recreation activities, most notably sailing, windsurfing, and water-skiing.

Seabed Surface
The entrance to Langstone Harbour has two long curving shingle spits. East Winner, an offshore sand bank at the mouth of Langstone and Chichester Harbours has been dredged for aggregate extraction (Future Coast, 2002). Within the Harbour itself there are very extensive intertidal mudflats and salt marshes, especially surrounding the numerous small islets. The sediments become sandier near the

Figure 3.2 Example extract Seascape polygon text description



ENGLISH HERITAGE



National Oceanography Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

to providing integrated marine spatial planning. The historic environment must play a key role alongside other marine issues and stakeholders in this emerging management structure for the marine zone. Seascapes can help facilitate the integration of historic environment data through providing a spatial approach.

Informing Management Plans

Although the offshore zone is not well covered in terms of management frameworks, this situation improves closer to the shore in coastal, intertidal and estuarine environments. A range of planning and management approaches have been developed for a variety of specific concerns. Seascapes is well placed to add an enhanced marine heritage dimension to such plans, many of which are subject to review and revision processes that provides an opportunity to include new or updated knowledge or understanding to future decision making (see case study examples).

Case Study - Local Management - Port and Estuary Management Plans

The Hamble Estuary Management Plan was produced in 2003 in response to the need for the integrated management of the coastal zone and to ensure the sustainable use and development of the Hamble Estuary. Archaeology is represented in this plan through policies under the headings of promote, protect and provide information. At the time the plan was drafted the knowledge of the archaeological resource was improving due to intertidal investigations, and quite a number of sites had been recognised and recorded in and around the river.

Hampshire County Council was one of the first to complete terrestrial HLC. This data has been considered during the Seascapes project along with site specific information to help form the broad character areas. This added level of data allows the marine heritage of the Hamble Estuary to be placed in its wider context and can be used to

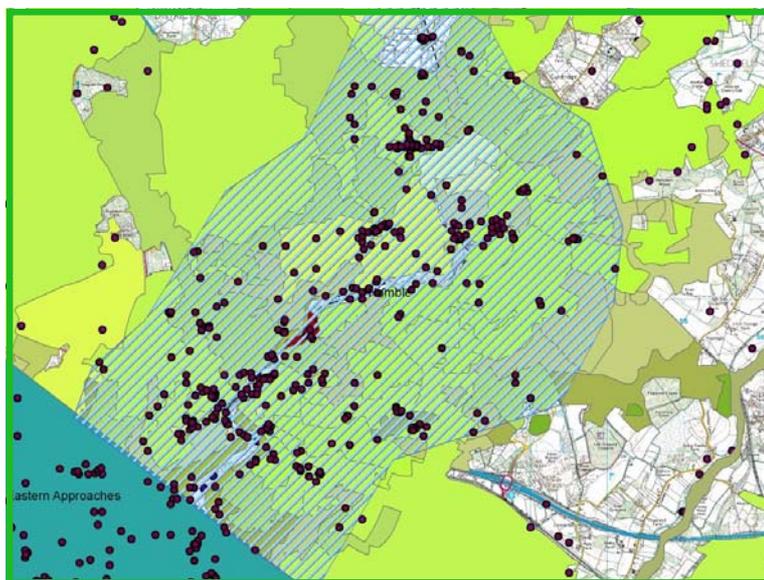


Figure 4.2 – Image showing terrestrial HLC's, Seascapes polygons and HER data

Case Study - Regional Management - Input into Shoreline Management Planning

The Seascapes project is timely in relation to the commissioning of the review of Shoreline Management Plans. These plans are focused on coastal defence and aim to identify issues and concerns that may be impacted by future changes. Archaeology and heritage did not feature prominently in the initial round of SMP's. This is surprising due to number of significant archaeological sites around the coast which are impacted by coastal change and due to the potential of archaeological and palaeoenvironmental material to act as an archive of information that can inform on the scale and pace of sea level and coastal change.

Due to the development of marine archaeological data gathering in the past ten years the Round Two revisions of the shoreline management plans now have more information on the resource which can be incorporated into the process. In addition to increased baseline data Seascapes, in conjunction with the land-based HLC, can begin to feed in more contextual information on the character and nature of the resource. An example of this is the stretch of coastline between Chichester Harbour entrance and Selsey Bill, figure 4.3 brings together data from the coastal and near-shore zone, Shoreline management units and the seascapes character polygon.

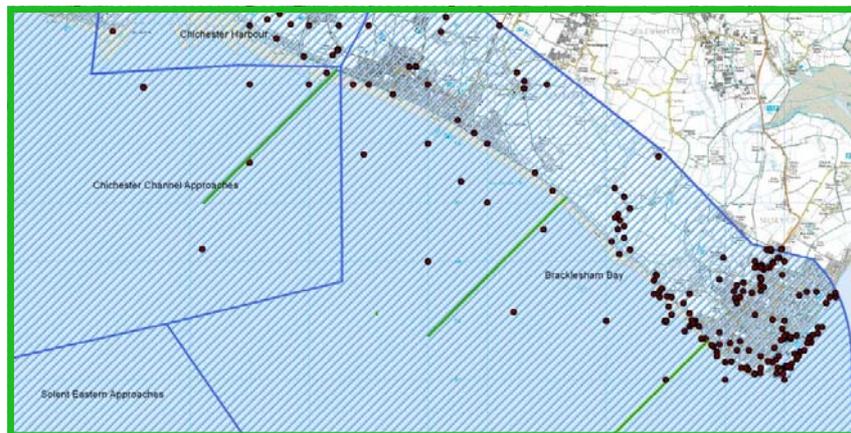


Figure 4.3 – Image showing maritime HER data, Seascapes polygons and shoreline management units between Chichester Harbour entrance and Selsey

A Predictive Role?

Terrestrial HLC has been used to begin to predict where certain types of archaeological sites and finds may be encountered. By using evidence of where it is known that an extensive archaeological resource within a particular environmental and/ or physical setting has been used to develop a 'character type' it is possible to start looking for similar settings or 'character types' to prioritise them for prospection and potential. Conversely, an understanding of the historical development of an area can indicate likely areas of destruction of earlier material, for example along dredged channels of various dates. In this way HLC begins to take on a predictive role. In the marine environment this may be more of an interpretive stretch at the moment due to the levels of information that we have available and the resulting 'coarse-ness' of the Seascapes interpretation, however, the same principles should be able to be applied in the future as quantitative methods for modelling archaeological potential develop.

We know that Seascapes can't and won't answer all management demands and queries for the marine zone, however, in comparison to relying on point data, it is a distinct advantage to be able to consider the marine historic environment from a holistic, area-based perspective.

5. Who will be Interested in Solent Seascapes?

Although the section above on what Seascapes can do has focused on uses in terms of heritage management, there are also a wide range of potential uses and applications for the Seascapes product.

Potential Seascapes Users

Heritage managers – Local Authority Curators and Historic Environment Records; English Heritage Maritime Archaeology, Characterisation and Regional Teams and the National Monuments Record Maritime Section; National Trust and other non-governmental conservation bodies.

Regulators and marine planners – A variety of government departments who deal with marine and maritime issues will be interested in the Seascapes product, these may include: DTI, DCMS, Future MMO, Defra, Natural England. Other organisations might include the Crown Estate and Environment Agency.

Contractors – units and organisations undertaking development related work, whether that is heritage regeneration projects, desk based assessments or strategic planning.

Developers and marine industry – companies or organisations could consult the Seascapes characterisation to help in the assessment of areas that could be suitable for development or use such as marinas, ports or dredging to gauge the potential affects on the historic character of an area and help in future risk management for projects. Examples might be those involved in oil and gas extraction, renewable energies, fisheries or marine aggregates.

Researchers – Universities, local societies and independent researchers.

The public: Coastal communities and coastal users; walkers, sailors, divers, recreational fishing, tourists.

Case Study - Future Marine Designation

Heritage organisations will be interested in Seascapes when responding to proposed changes to the marine designation system which are to be outlined in the DCMS White Paper 'Heritage Protection for the 21st Century'. The move to consider a broader definition of 'marine historic assets' with the potential to designate wider areas of the seabed will be able to draw on the character definitions produced for seascapes when assessing the significance of individual sites and areas within the broader sea area. Traditionally the only marine cultural heritage designations have been through the Protection of Wrecks Act 1973 which is based on individual historic wreck sites and protects an area around them. This legislation is now out of date and the proposed changes to marine designation will allow a much more holistic view of the cultural heritage.



Case Study - Dive sites in context

Seascapes can be used by divers who want to find out more about the historic character of an area in which individual dive sites are situated.

The popular dive site of HMS *Velox* is situated off the East of the Isle of Wight, it represents the remains of this experimental turbine powered destroyer, which was built in 1902 and sunk by a mine in 1915.

Viewing the descriptive text for the Seascapes polygon for 'Bembridge Point' reveals further information on the character of the area including the sea surface, seabed surface and seabed subsurface.

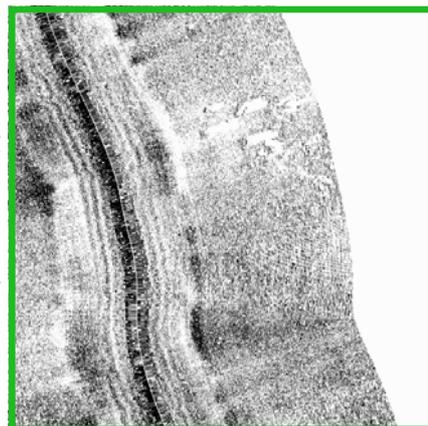


Figure 5.1 HMS *Velox* – the remains of which are a popular dive site off the North East coast of the Isle of Wight.

6. What next for Seascapes?

Refining Seascapes and considering use in other areas of the coast

There have now been five separate trials of the Seascapes methodology in areas around the UK coast (figure 6.1). Each project has had different marine and coastal environments to deal with and an equally varied set of marine data. English Heritage will now be considering the outcomes of all five of the Pilot projects to assess how best to consolidate the application of Historic Landscape Characterisation to the marine zone.

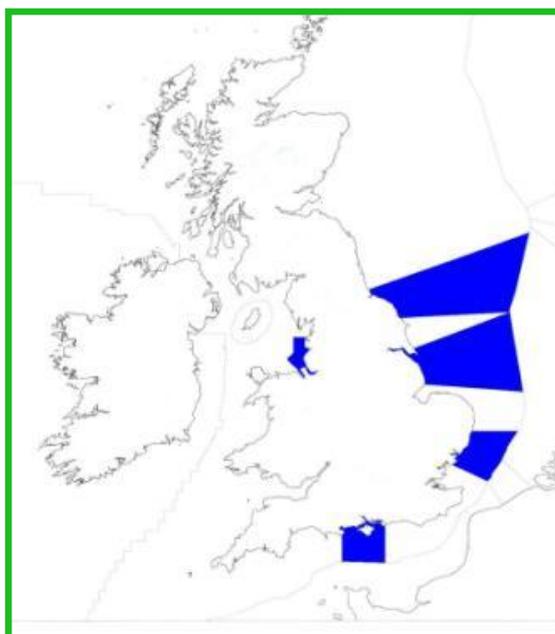


Figure 6.1 – Image showing location of all five Seascapes Pilot Projects

Updating through changing interpretations

As Seascapes is an interpretation of the historic character of the marine zone based on currently available data, as the quantity and quality of the available data improves it will be necessary to update the Seascapes characterisation. This is particularly important considering the fast pace at which approaches to management, research and interpretation of the marine zone is changing.

Future improvements?

The Solent Seascapes project has been undertaken in a twelve month period. This is a short space of time considering the scale of the area, complexity of issues with available data and challenges of adapting a methodology developed for the terrestrial area for use at sea. There is a lot more that could be done with Solent Seascapes. This project has provided a broad overview of principle Character Areas. With further application the resolution of this product could be increased to provide more detailed characterisations.



ENGLISH HERITAGE



National Oceanography Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL

7. Where can I find out more about Seascapes and Historic Landscape Characterisation?

There are a number of websites where you can find out more:

English Heritage – www.english-heritage.org.uk

English Heritage Maritime Team - www.english-heritage.org.uk/maritime

English Heritage Promoting Characterisation - www.english-heritage.org.uk/server/show/nav.1292

Welsh Historic Landscape Characterisation - <http://www.acadat.com/projects/HistoricLandscapeCharacterisation.htm>

Hampshire's Historic Landscape - www.hants.gov.uk/landscape/

Isle of Wight Historic Landscape Characterisation Project - www.iwight.com/living_here/planning/Archaeology/Projects/Historic_Landscape_Characterisation/

West Sussex Historic landscape characterisation - www.westsussex.gov.uk/ccm/content/environment/heritage-wildlife-and-landscape/west-sussex-character-project/historic-landscape-characterisation-of-sussex-hlc.en;jsessionid=aeiMKpA3tDe4

England's Historic Seascapes Programme - www.english-heritage.org.uk/server/show/nav.001002003008006

Liverpool Bay Seascapes Pilot - www.wessexarch.co.uk/projects/marine/eh/seascapes/

Solent & Isle of Wight Seascapes Pilot - www.solentseascapes.org.uk



ENGLISH HERITAGE



National Oceanography
Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND
NATURAL ENVIRONMENT RESEARCH COUNCIL