

Carmarthen Bay, Gower and Swansea Bay

Local Seascape Character Assessment

Final Report

for

City and County of Swansea
Carmarthenshire County Council
Neath Port Talbot County Borough Council
Bridgend County Borough Council
Natural Resources Wales

November 2017



in conjunction with



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In conjunction with
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SEASCAPE CHARACTER AREA PROFILES

Number SCA-	<i>Name</i>
1	Afon Tywi, Taf and Gwendraeth estuaries
2	Carmarthen Bay- East
3	Loughor Estuary
4	Rhossili Bay
5	Worms Head to Port Eynon Point
6	Oxwich and Port Eynon Bays
7	Pwllidu Head to Mumbles Head
8	Swansea Bay- west
9	Swansea Bay- east
10	Neath estuary
11	Margam to Porthcawl
12	Porthcawl
13	Nash sand bar
14	Bristol Channel- south east
15	Bristol Channel- east
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1 Introduction



1. Introduction

- 1.1. White Consultants, in conjunction with Cardiff University, were appointed in February 2016 to undertake a local seascape character assessment for east Carmarthen Bay, the Burry Inlet/ Loughor Estuary, Gower, and Swansea Bay including the territorial waters upto 12nm offshore. The City and County of Swansea was lead client on behalf of a steering group of authorities and groups including Carmarthenshire County Council, Neath Port Talbot County Borough Council, Bridgend County Borough Council and Natural Resources Wales (NRW).
- 1.2. The brief states that the aim of the project is to form part of a national dataset and should be carried out to UK national seascape guidance and be compatible with other similar Welsh studies. The brief also states that the longer term aspiration is to seek adoption of the assessment as a supplementary planning document in Local Development Plans (LDPs). However, the various authorities are at different stages and are likely to take different approaches to the use of the study.
- 1.3. At a national level, the Marine and Coastal Access Act 2009 requires the Welsh Government to develop a spatial planning approach to the management of its marine areas. Evidence has been collected and the initial draft Welsh National Marine Plan was published in 2015. A final draft is due in 2017 for final consultation. The Wales National Seascape Assessment (NRW,2015) formed part of the evidence base and provides the context for this assessment.
- 1.4. The western boundary of the study is within Carmarthen Bay and adjoins the completed Pembrokeshire Coast seascape assessment which considered the National Park and its marine setting. The southern boundary is the territorial waters limit. The eastern boundary is defined by the edge of the National Marine Character Area 26 for Swansea Bay and Porthcawl, projected offshore to the territorial limit. The derivation of the landward boundary is explained in the method. The study area is indicated on Figure 1.
- 1.5. The study should be read in conjunction with the relevant LDPs' landscape, coastal and conservation policies and Gower AONB Management Plan. It should also be considered with other guidance and baseline information including, LANDMAP and Gower Landscape Character Assessment SPG (2013). The study seeks to provide further information on the character of seascape in general and special qualities in particular areas, such as Gower AONB and Heritage Coast.
- 1.6. The definition of seascape in the UK Marine Policy Statement, 2011, 2.6.5.1 is:
'Landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other'
- 1.7. The European Landscape Convention has an earlier definition of landscape which can also be applied to seascape (and is more compatible with both the national and local seascape assessment methods):
'an area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land with sea, by natural and/or human factors'
- 1.8. The report is structured to explain the method used (2.0), to set out guidance on the use of the document (3.0), and to give an overview of the seascape of the study area (4.0). Then, each seascape character area is described in turn (5.0). The appendices deal with the seascape typologies, data used, a record of stakeholder and web consultation, background information and a glossary.

2 Method



2. Method

Development of seascape character assessment methodology

- 2.1. The method for this study seeks to build on current guidance but is tailored for the particular scale of assessment, for the study area and its location in Wales. In order to be compatible and consistent with other studies, this study uses the Pembrokeshire study method, making some incremental improvements and using additional data such as the new Wales-wide intervisibility dataset.
- 2.2. As stated in the introduction, the study lies within the context and framework of the UK Marine Policy Statement, 2011 and the National Seascape Assessment for Wales, November 2015. This was carried out broadly in line with UK national seascape guidance led by Natural England (NECR105). This guidance is broad brush, setting out principles and giving flexibility of approach so all guidance can be taken into account. Therefore, the detailed approach for this study has been developed by the consultant team referring to the relevant parts of older guidance and other studies, such as Pembrokeshire.
- 2.3. The relevant seascape guidance and reports mentioned above and taken into account by this study are as follows, in reverse date order:
 - National Seascape Assessment for Wales', NRW Evidence Report No: 80, LUC, November 2015
 - Pembrokeshire Coast National Park Seascape Character Assessment, White Consultants, April 2013.
 - Seascape Characterisation around the English Coast (Marine Plan Areas 3 and 4 and Part of Area 6 Pilot Study) (NECR106), Natural England, 2012.
 - An approach to Seascape Character Assessment, (NECR105), Natural England, Scottish Natural Heritage and Countryside Council for Wales, 2012.
 - Dorset Coast Landscape and Seascape Character Assessment, LDA, C-SCOPE, 2010.
 - Welsh seascapes and their sensitivity to offshore developments, Briggs, J.H.W. & White, S, CCW Policy Research Report No. 08/5, January 2009.
 - An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms, University of Newcastle, Commissioned Report no. 103, Scottish Natural Heritage, 2005.
 - Guidance on the assessment of the impact of offshore windfarms: seascape and visual impact report, Enviros, DTI, 2005.
 - Guide to best practice in seascape assessment, Hill et al, Countryside Council for Wales and University College, Dublin, Brady Shipman Martin, 2001.
- 2.4. The scale of the assessment is taken as local authority level.
- 2.5. Other guidance prepared primarily for landscape and visual assessment is also relevant to this study. It is important to ensure that terms and approaches to seascape are the same as for landscape insofar as the substantially different qualities of the two environments allow. Relevant publications include:
 - An Approach to Landscape Character Assessment, Natural England, 2014.

- Guidelines for Landscape and Visual Impact Assessment, third edition, (GLVIA3), Landscape Institute and Institute of Environmental Assessment, 2013.
- LANDMAP, Natural Resources Wales.
- Topic Paper 6 Techniques and criteria for judging Capacity and Sensitivity, Countryside Agency, Carys Swanwick and LUC, 2003.
- Skye and Lochalsh landscape assessment, Stanton, C. Scottish Natural Heritage Review No.71, 1996.

Approach to collection of data and mapping

- 2.6. Data for the study has been provided by NRW and other parties including the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW), and other steering group members. This has been organised by Cardiff University into a series of folders covering natural, cultural/historic and aesthetic/perceptual subject areas.
- 2.7. The data provided and suggested from other sources covers a very large range of information. Some of the data has been found to be essential for defining marine types whilst other data is considered to be useful in assisting description of seascape character areas (SCAs). Not all marine data necessary has been available and significant time has been needed to obtain data. NRW have an important role to play in holding and licensing accessible data relevant to marine and seascape studies in future.
- 2.8. The following data has been necessary to inform marine types/typology and has been obtained via NRW:
- BGS Bath250- for Bathymetry/depth of water
 - BGS DigMap250- for solid and sediment seabed geology.
 - Wave climate
 - Admiralty charts for broad reference
 - OS maps for broad reference
- 2.9. The broad contextual layers informing this first stage are mapped in the **Figures** section.
- 2.10. Some information from third parties has a charge attached. The one additional dataset acquired is:
- Wales Activity Mapping- recreational activity available from Pembrokeshire Coastal Forum (PCF).
- 2.11. The list of data used can be found In **Appendix B**.

Terms and definitions

- 2.12. It is important to define terms so all parties are clear about what is meant by the study findings. A glossary of terms is set out in **Appendix H**. This uses terms primarily defined by the latest seascape character assessments (SCAs) and landscape character assessment (LCA) guidance. Other sources include the European Landscape Convention and LANDMAP to ensure that there is compatibility with existing assessments in the Welsh context.

Approach to defining the study area and the inland extent of SCAs

- 2.13. The parameters governing the study area are defined in Section 1.0. The following National Marine Character Areas (MCAs) are included:

- MCA 24, Carmarthen Bay and estuaries (part)
 - MCA 25, Gower and Helwick Coastal Waters
 - MCA 26, Swansea Bay and Porthcawl
 - MCA 28, Bristol Channel Wales (part)
- 2.14. The marine part of the study area is 12 nautical miles (nm) out from the coast, defined by a line 90 degrees from the coast from near Laugharne to coincide with the Pembrokeshire seascape study to the west, and from Porthcawl to the east (see Figures). The latter boundary has been extended eastwards from Porthcawl Point defined in the brief to include all of MCA 26 to provide a clean break with any future study to the east. To the west, the process of defining SCTs and SCAs has meant that SCTs and SCAs within the Pembrokeshire coast study area are proposed to be modified to provide a logical continuum and to reflect the character of the sea within this study area.
- 2.15. The marine parts of the study area are defined by the Low Water Mark (LWM) and the intertidal parts between this and the High Water Mark (HWM).
- 2.16. For the purposes of obtaining data an inland boundary 10km from the coast was defined. However, this was purely to allow consideration of context and the actual seascape character area (SCA) boundaries are drawn closer to the coast/water edge.
- 2.17. The brief suggested an approach to defining the inland extent of SCAs. This was
- *'A desire as much as possible to follow existing landscape character area boundaries (or visual and sensory aspect areas as a proxy where no LCA is available). This helps make the relation of LCA and SCA easier to understand spatially. Where LCAs run inland, a coastal character-based cut off needs establishing, informed by the SCTs.*
 - *A desire to reflect very close proximity to the sea as being included whatever the landscape character (due to exposure, smell, sound, etc.)*
 - *Recognition of the importance of views and land-sea inter-visibility (already mapped as part of the National Seascape Assessment for Wales) as a separate layer to inform profile descriptions.'* (5e)
- 2.18. Discussion with the client steering group at the inception meeting indicated a desire by some that the inland boundary should include land which has a strong visual relationship with the sea/tidal waters, in order to spatially define a coastal zone. This was carefully considered, but a detailed inland boundary for this purpose was found to be inappropriate. Land some distance from the coast which is intervisible with the sea, with intervening areas that are not intervisible, is problematic to include within an SCA. However, all land which is intervisible with the sea and coast, ie the setting, should be considered as part of a coastal zone and the seascape character of the adjacent SCAs should be taken into account in planning policy and development management. These areas of intervisibility are broadly defined in the maps for each SCA. In addition, areas where buildings may be intervisible with an SCA due to their height should be included within a coastal zone. Our approach means that the Seascape Character Areas and descriptions will complement rather than duplicate the terrestrial landscape character and LANDMAP assessments, and areas inland which have limited visual or physical connection with the sea between the coast and areas of high visibility can be excluded from the assessment. The approach set out in the brief has been followed, with the focus of the SCAs on the marine

- and coastal parts of the study area with consideration of areas further inland as setting, outside the SCAs.
- 2.19. The inland SCA extent has been defined by overlaying 1:25,000 OS mapping and the LANDMAP visual and sensory and landscape habitats layers to define terrestrial types related directly or closely to the coast eg dunes, coastal cliffs and slopes, caravan sites. These form the terrestrial type components within the proposed SCAs.
- 2.20. In order to define the setting, the Wales-wide land/sea intervisibility layer has been used to show the relative levels of intervisibility. Those areas with the strongest relationship with the relevant SCAs eg as backcloth, are described in the SCA descriptions with any relevant features mentioned. These are important components helping to define the character of the coastal SCAs in particular.

Defining seascape types

- 2.21. The typology of marine, intertidal and terrestrial types with a proposed nomenclature developed in the Pembrokeshire study is used in this study. The types differ from the NECR105 approach as they form relatively small scale 'building blocks' of marine, intertidal and terrestrial types which the proposed SCAs will amalgamate. In NECR105, types are generic classifications which may cover a number of large areas which themselves are individual SCAs. The types are also proposed to be at one level, the local authority level, reaching out to sea the full 12nm offshore.
- 2.22. **Marine types** extend from the 12 nm limit across to estuary, tidal channel and harbour/marina settings. The draft typology for physical controls is based on datasets of bathymetry, sea bed sediments and bedrock, and wave climate or stress:
- Primary distinction is made between shallow depths 0-30m, moderate depths 30-60m, and deeper waters >60m.
 - Sea bed sediments range in grain size from gravel to mud; bedrock contributes to that sediment and may be exposed on the sea floor towards islands/islets. Sea floor sediment is contributed to by erosion, lost through sedimentary processes, and may be transported by currents and waves along the coastline.
 - Sea floor topography - eg slopes, channels/troughs, sand banks/sand waves and islets. Topography influences wave climate and water turbulence.
 - Wave climate or stress- a combination of wave height, direction and period over time relating to wind/wave exposure (fetch), tidal and current conditions, wave and tidal stresses, and bathymetry. This dataset was determined by others using a high resolution wave model verified from qualitative field data. The resulting qualitative categories of exposure have been classed in this study as high and low.
- 2.23. Further qualities have been added to each type to further inform seascape character area descriptions. These are:
- Sea floor topography - slopes, channels/troughs, islets.
 - Turbulence
 - Bedrock type
- 2.24. The prime characteristics define the uses of the sea and coast. These uses are described at the SCA stage rather than the types stage to keep the typology simple and broadly applicable.

- 2.25. The Marine SCTs typology is set out in **Appendix A** and their extent shown in the **Figures** section.
- 2.26. **Intertidal types** are already defined in detail by the Phase 1 habitat intertidal study. This is an extremely detailed, fine grain and apparently accurate dataset and is therefore used to define the limits of the marine and terrestrial types on either side. As the dataset is quite complex such as differentiating between different types of rocks in narrow bands along rocky shores (eg high, medium and low energy littoral rocks) these are amalgamated into simpler categories which make sense at a seascape scale ie mud, sand and shingle, rock, saltmarsh and saline reedbed and biogenic reef. The Intertidal SCTs typology is set out in **Appendix A**.
- 2.27. **Terrestrial types** are based on 1:25,000 OS mapping and the LANDMAP visual and sensory and landscape habitats layers related directly or closely to the coast. The description of the process of defining the landward boundary above explains this further. The types are then divided into different classification based on LANDMAP aspect Level 3 eg dunes, coastal cliffs and slopes, caravan sites.
- 2.28. Marine types are generally larger scale than terrestrial types, with the intertidal types generally the smallest scale simply due to the characteristics of the areas eg the fine grain nature of the coastal edge(with the exception of the Loughor estuary). The proposed Terrestrial SCT typology is set out in **Appendix A**.

Defining seascape character areas

- 2.29. The SCA boundaries have been primarily driven by the marine SCTs as these define the character of both the marine areas and the coast with different geological formations. These in turn dictate coastal and sea use to a large extent. The coastal SCAs are a combination of marine, intertidal and coastal landscape types. The estuarial SCAs are primarily defined by the intertidal and terrestrial types.
- 2.30. The proposed SCA lines deviate from the MCA boundaries but acknowledge their location. As the MCAs were resolved at a broad brush scale it is considered that these only set the broad framework, and variations are responded to at the local level.
- 2.31. The inland boundaries of the terrestrial types define the inland boundary of the SCAs. They are primarily defined by where the marine types abut the intertidal areas and then respond to the landform, landcover or the viewshed separating adjacent SCAs. The intertidal types have generally not been definitive in determining boundaries and SCA boundaries therefore may divide up these types.

Desk Study

- 2.32. For each SCA the team carried out a desk study to identify further information on natural and cultural influences on character. The natural influences included geology, coastal processes, currents and tidal range, intertidal features and nature conservation interest. The cultural influences included historic patterns of marine use, features of archaeological and historic interest, current patterns of commercial and leisure marine and coastal use and cultural associations e.g. poetry and art.

Site Visits

- 2.33. Aesthetic and perceptual factors were derived in part through the desk study but most information was collected as part of the site survey. The site survey was also used to verify SCA boundaries and other features, and give an insight into the use of the area in different seasons. Site visits were carried out around the

coast in summer 2016, in peak season, and in off season- April and December 2016. A professional photographer took photographs from defined key viewpoints and SCAs. Boatwork was also carried out in the coastal and near coastal SCAs in the summer to experience the sea and understand the relationship with the coast. The limitation of taking craft out in calm conditions in order to take photographs meant that the full range of possible conditions were not experienced at sea.

Consultation

- 2.34. The consultation process was divided into four stakeholder workshops and a web-based consultation. Draft profiles for the 20 seascape character areas with associated mapping and photos were prepared for consultation. Comments were invited on SCA:
- Boundaries.
 - Summary descriptions
 - Key characteristics
 - Forces for change
- 2.35. Three workshops were held for geographically distinct areas covering coastal and estuarial SCAs. The fourth workshop covered offshore SCAs and also provided an overview. Welsh translation services were offered prior to the workshops but were not taken up. The results are shown in **Appendix C**.
- 2.36. A website was constructed in Welsh and English to facilitate responses to draft seascape character areas and descriptions (*gowerseascape.org.uk*). The responses were structured in a Survey Monkey response form for each SCA. Whilst respondents were requested to state their name and contact details to verify their inputs, all results were anonymised. The website was available for comment for 6 weeks and was promoted by the four steering group local planning authority members and NRW. Links to the site were located in the City and County of Swansea and Neath Port Talbot CBC websites. All responses were in English. The results are shown in **Appendix D**.

Reporting

- 2.37. The final reporting incorporated comments from the steering group and from the consultation. In addition, further information was set out for each SCA. This included the cultural benefits and services each area provided, the forces for change at work in each area and the factors which contributed or detracted from the sensitivity of each area. (See **Appendices E , F and G** respectively for the methods and criteria employed.)



A family taking pictures (and selfies) of the iconic view of Rhossili beach (to the right), with Worms Head in the background. This activity is common on this cliff top but is not without risk.

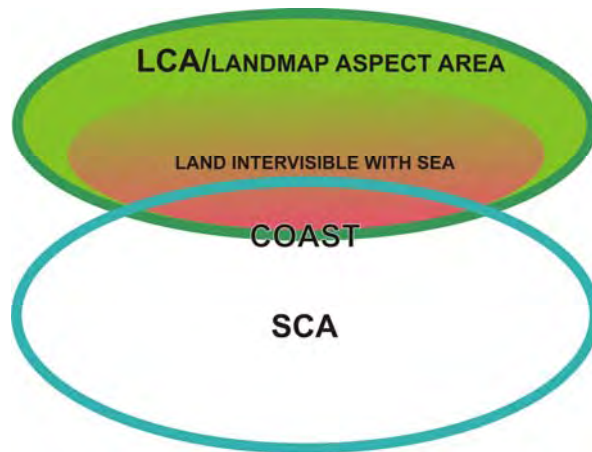
3 Guidance on the use of the document



3. Guidance on the use of the document

Introduction

- 3.1. This guidance is written to be used as part of the main report but also as a separate document if required.
- 3.2. The seascape character assessment has a variety of uses from informing policy and development management decisions, assisting developers and their consultants and informing the general public. It is a tool for the management of change in the coastal and marine environment, covering four coastal local planning authorities. It is equivalent to, and overlaps, existing landscape information including LANDMAP and landscape character assessments. Whilst there is a spatial overlap at the coast, the information it provides complements the land-based assessments as it focuses on marine and coastal character, rather than the landscape, and importantly, the document explores the relationship between land and sea. Some areas are covered by landscape designations such as Gower AONB or Special Landscape Areas. The document should be referred to alongside other assessments and studies in relation to any coastal or marine planning, strategies or development.
- 3.3. The document is structured as follows:
 - Main report with introduction, method, overview and guidance for use.
 - Individual seascape character area (SCA) assessments
 - Appendices on seascape typologies, data used, stakeholder consultation, detailed method statements and glossary of terms.
- 3.4. The relevant SCA assessments should be read in full and considered within the context of the main report. The assessment integrates natural and cultural considerations and includes an understanding of how places are experienced and perceived by people. The study identifies the key elements, features and characteristics that come together to create the intrinsic sense of place and character of a given SCA.
- 3.5. The study area includes both undeveloped and developed coast. Most Welsh cities and towns are in coastal locations, many with brownfield sites. The study is therefore highly relevant to both urban planning policy and regeneration as well as landscape/seascape conservation.
- 3.6. The assessment provides baseline spatial evidence at a local authority scale. It complements the strategic level National Seascape Assessment for Wales which identified 29 marine character areas (MCAs) to inform the Wales Marine Plan. Four of the MCAs relate to this study area, so compared to the 20 identified in the study, there is a significant difference in grain of spatial definition. The MCAs also only cover the marine area up to the high water mark. Therefore, this local seascape assessment makes a stronger link with the coast and hinterland at a finer grain, and is therefore useful for a wider range of applications.
- 3.7. Areas where seascape character should be taken into account are:
 - Within an SCA
 - Areas adjoining an SCA where there may be indirect linkage
 - Areas intervisible with an SCA as shown on the intervisibility mapping
 - Areas where an existing or proposed structure would be intervisible with an SCA due to height above ground.



Areas where SCA character should be taken into account

Informing policy development

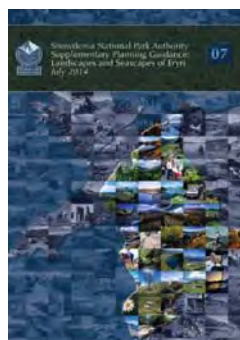
- 3.8. The study lies within the context and framework of the:
- Marine and Coastal Access Act 2009UK
 - Marine Policy Statement, 2011
 - Draft Welsh National Marine Plan
- 3.9. It is also relevant to the sustainable management of resources within the context of the Well-being of Future Generations (Wales) Act 2015 and Environment (Wales) Act 2016.
- 3.10. The seascape character assessment has been prepared to form part of the evidence base for the relevant LPAs' Local Development Plans (LDPs) and also for other plans and strategies.
- 3.11. In line with the European Landscape Convention, seascapes and marine environments should be considered as being included in the definition of landscape. The UK Marine Policy Statement (2011) indicates that:
- 'seascape should be taken as meaning landscapes with views of the coast or sea, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other'.*
- 3.12. LDPs only apply to the land within a local planning authority (LPA) boundaries down to the low water mark (LWM). However, Planning Policy Wales states that local plans and policies needs to consider landward and seaward pressures and related impacts on the coast (5.7.1). Seaward pressures may include waste disposal, sea fishing, increased leisure sailing, dredging of navigable channels, watersports and bathing, marine aggregate extraction or tidal and wave power generation. Landward pressures may include major development on the coast, harbour works, leisure and recreational facilities, wind power generation and coastal defences.
- 3.13. Policies should aim to protect or enhance the character and landscape of the undeveloped coastline and consideration of designated Heritage Coast should be incorporated in the LDP. Although this designation does not affect the status of the area in planning terms, the features which contribute to its designation are important in formulating policies. The seascape character assessment can assist in better describing the qualities of the Heritage Coast. Coastal locations considered suitable or unsuitable for development, or subject to significant constraints should be shown on proposals maps. The seascape character assessment provides part of the evidence base to inform these spatial policies.

- 3.14. Coastal seascape character areas (SCAs) include the coastal strip within LPA boundaries as well as the adjacent sea. These are clearly relevant to LPAs and their policies. In addition, the areas defined as intervisible with the sea close to the coast as defined on the SCA maps are also relevant in terms of coastal policies. The SCAs further offshore which are not directly connected to the coast are still relevant to consideration by policy as they contribute to the character of the open sea view from coastal areas. Some SCA's may be included in more than one LPA's policies



Offshore seascape character areas contribute significantly to this view from Rhossili Down

- 3.15. In the shorter term, any local planning policies relating to landscape should apply to seascape equally where relevant i.e on the coast or intervisible with the sea/coast. Whilst having an informal status the document may be placed before relevant LPA members committees to be noted. It is suggested that the document should then be available from relevant landscape and planning officers in each LPA as well as from NRW as a background document. This could then help inform emerging policies and development management.
- 3.16. In the medium and longer term, seascape can be used as a term in policy alongside landscape and it is hoped that the relevant parts of the seascape character assessment will form part of the LDP evidence base, and inform the National Development Framework and Strategic Development Plans. Ultimately, the assessment should become an adopted supplementary planning guidance (SPG) to give it most weight in planning terms. This has been carried out for the seascape assessments for Pembrokeshire Coast National Park Authority and Snowdonia National Park Authority. The fact that this seascape character assessment has been consulted upon with stakeholders and opportunity given for wider inputs via a consultation website mean that the assessment has some degree of consensus already. However, clearly formal consultation on the document would still be needed in each LPA for it to achieve SPG status.



Pembrokeshire Coast National Park Authority and Snowdonia National Park Authority seascape SPGs

- 3.17. The seascape character assessment considers forces for change in each SCA. These pressures can be helpful in guiding planning policies, such as where the effects of development pressure are noticeable. As the assessment is a snapshot in time, it can also be helpful in the monitoring of change.

- 3.18. The seascape character assessment could be useful in the identification of issues and informing management policies such as in future Gower AONB Management Plans. The particular qualities identified in the assessment may also be incorporated in the AONB Plan in future. Any review of designated area boundaries should take the SCAs into consideration.
- 3.19. The assessment should be taken into account in development briefs and design guidance for all coastal developments. The basic aim should always be to carry out development which conserves and enhances the SCA and respects its key characteristics and sensitivities.
- 3.20. Other strategies that may be influenced by the assessment in terms of both spatial extent and characteristics include:
- Renewable energy strategies
 - Minerals and waste strategies
 - Recreation and tourism strategies
 - Caravan and camping policies and strategies (eg Pembrokeshire Coast)
 - Place Plans and regeneration strategies
 - Sustainable management strategies incorporating the ecosystems approach
 - Climate change mitigation and adaptation responses
 - Coastal defence and management plans
 - Shoreline management plans
 - Community plans

Use for development management

- 3.21. The seascape character assessment is a useful tool for development management both for decision-makers and assisting developers, landowners and their consultants.
- 3.22. The undeveloped coast is generally an area of constraint in national and local policies. Proposed development on the coast should take into account the seascape character assessment in conjunction with existing landscape and conservation policies, including the relevant designations such as Gower AONB and Heritage Coast. Development management decisions affecting the AONB should favour conservation of natural beauty. It should also be noted that for development and activities proposed in areas outside the AONB, the effects on its purpose and setting should still be considered. As seas and estuaries around the AONB are open and reflective, effects may be possible over significant distances.
- 3.23. As stated above, the seaward limit of terrestrial planning control is generally the mean LWM, but between high and low water mark the planning system usually needs to operate in conjunction with a range of other controls over coastal and marine development such as licensing. Decisions on development proposals seaward of the mean LWM are generally outside the scope of the terrestrial planning system. However, developments on the coast can have effects on the marine environment and should be considered in the context of the seascape character assessment. Often, marine developments also have a coastal component.

- 3.24. For marine developments themselves, LPAs are not the decision-making authorities but are statutory consultees. The Planning Inspectorate deals with developments of national significance (DNS) on behalf of Welsh Government. LPAs and NRW can suggest what information should be taken into account and this should include the local seascape character assessment as the most detailed marine spatial seascape assessment. LPAs can prepare Local Impact Reports (LIRs) setting out how they see the development affecting their area and NRW will also provide advice. The seascape character assessment should inform such reports.
- 3.25. Overall, the seascape character assessment provides baseline evidence which can inform where and what type of development would be likely to be acceptable in terms of seascape, landscape and visual impact. The information is applicable to a wide range of scales of development- from individual dwellings on rural coastlines and structures such as lifeboat stations through to large scale tidal lagoons, such as that proposed in Swansea Bay, and offshore developments. The level of detail required will depend on the scale and likely effect of any given development, and will be defined by the LPA as part of the screening and scoping process. The required output will range from a statement of likely effects on seascape character through to a full seascape, landscape and visual impact assessment (SLVIA) as part of an environmental statement.
- 3.26. Seascape character needs to be considered where a proposed development lies within an SCA or there is intervisibility between the development and SCA/s. This may be defined by the use of computer-generated zones of theoretical visibility (ZTVs) or by other means which provides robust and justifiable evidence. Developers and their consultants then need to consider the effects on seascape character and how the design should respond to conserve or enhance the qualities of SCAs or at least to minimise the effects.
- 3.27. The method for assessing the effects on seascape character are similar as assessing the effects on landscape character which are set out in the Guidelines for Landscape and Visual Impact Assessment (GLVIA)) published by the Landscape Institute (see page 76 in the current Third Edition, 2013). It is suggested that the effects on individual seascape character areas are assessed in the same way as the effects on landscape character areas or LANDMAP aspect areas. Depending on the scale of development, there may be a case to subdivide SCAs into smaller areas which may have slightly different characteristics (and potentially different level of effects). This would need to be done in line with the current seascape character assessment method.
- 3.28. It is important to emphasise that due to the openness and generally unspoilt character of the sea that the effects of marine development within it could have a greater effect on surrounding areas intervisible with it than if it was another landscape character area with established patterns. Similarly, development on areas of coast or hinterland exposed to view from the sea has the potential for significant effects on character and users of the sea, even if outside an SCA. The effects not only include visual impact but also the effects on coastal processes which could more fundamentally change the character of an area. For example, a marine development may interrupt and change current sedimentation processes so that some parts of the coast are starved of sand while others may accumulate sand in greater quantities.
- 3.29. The seascape character assessment provides a list of factors that contribute or detract from sensitivity. These should be taken into consideration when defining a level of sensitivity for a given seascape character area in relation to a specific type of development.

- 3.30. The assessment lists key characteristics informed by detailed descriptions. It should be assessed if those key characteristics are removed or changed by the proposed development, or if the development itself would become a key characteristic. The greater the effect the more likely it is to be significant. In considering the character of an SCA and how development may affect it, the detailed descriptions should be fully taken into account as well as the key characteristics.
- 3.31. Development should be assessed if it is in line or in conflict with policies relating to landscape/seascape character, designated landscapes such as Gower AONB, the effect on visitors and visual amenity. In relation to designated landscapes, the effect on their qualities and how they are conserved or enhanced should also be explored.
- 3.32. The developer should employ suitably qualified chartered landscape architects who are experienced in seascape assessment to carry out SLVIAs. Similarly, for larger scale developments, the LPAs may also be advised by suitably qualified specialists to ensure that the assessments are carried out in line with good practice and arrive at reasonable conclusions which can be relied on for decision-making.
- 3.33. The report will be available in pdf form and the SCAs defined in a GIS form for ease of use by developers, and incorporation into SLVIAs.

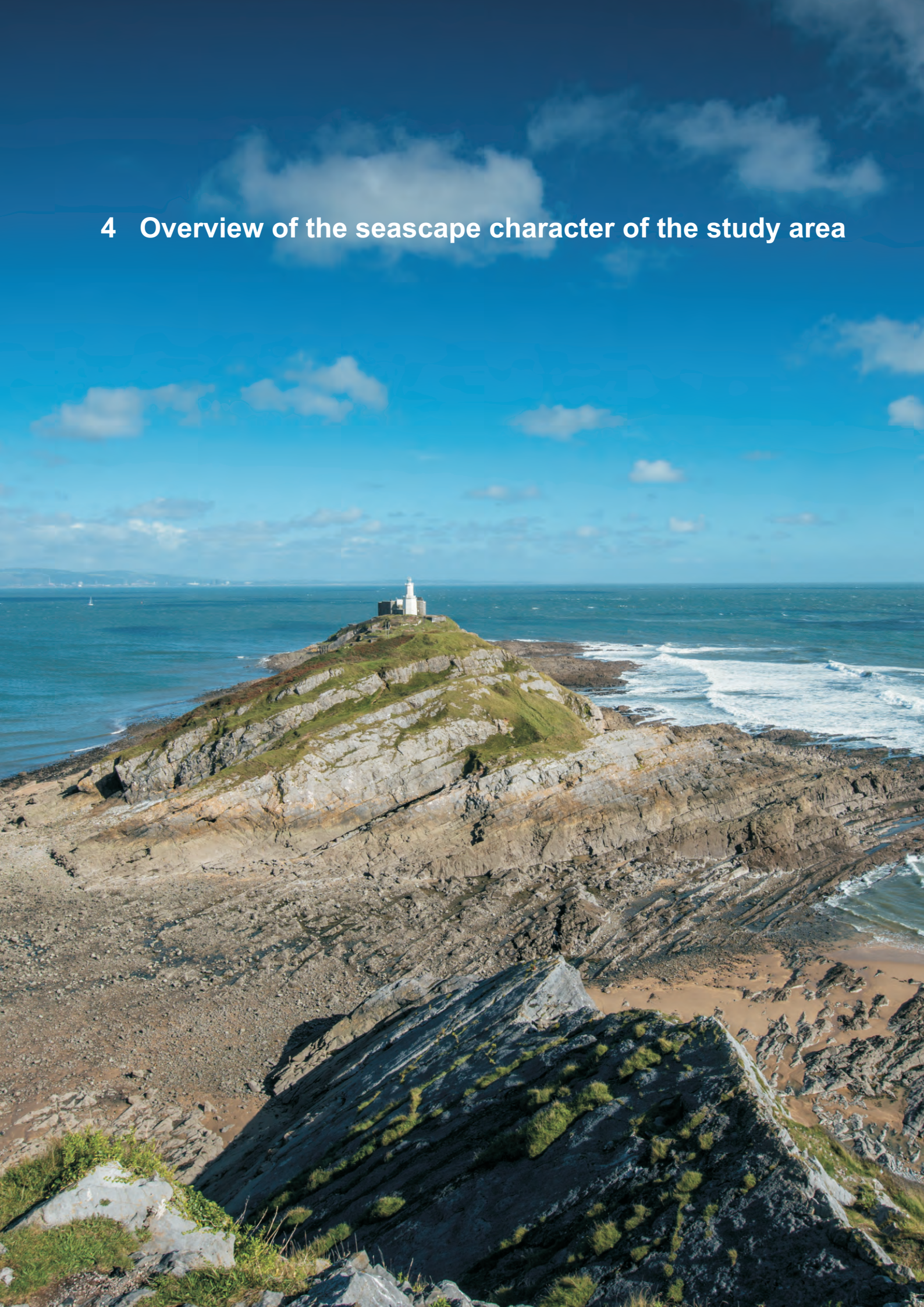
Informing the general public

- 3.34. The seascape character assessment contains information which will provide a better understanding of the coastal and marine environments. There is an overview with a series of summary maps which show the pattern of constraints and uses throughout the study area. For each SCA there is a summary and rich, detailed descriptive information covering physical and cultural influences and perceptual factors. This means that the public can use the assessment at various levels of detail and complexity to inform their knowledge of the area.
- 3.35. In relation to development proposals, the public can use the information to inform their views on the effects on seascape character.
- 3.36. The information will be made available as an overview pdf report and individual SCA pdf descriptions to allow ease of access from LPA websites as and when the report is noted or adopted. There is possibly a role for other bodies such as Gower Society in keeping a digital and hard copy of the report for reference.



Neath estuary at low tide looking toward Giant's Grave beneath the M4 crossing- illustrating a more urban SCA

4 Overview of the seascape character of the study area



4. Overview of the seascape character of the study area

- 4.1. This overview of the study area is complemented by summary Figures 2-19 following which show how natural and cultural influences define seascape character types and areas and contribute to their character.

Location and physical influences

- 4.2. The study area coastal boundary runs from the Taf estuary on Carmarthen Bay to the west to Newton Point at Porthcawl to the east. It is on Great Britain's western seaboard facing the Atlantic Ocean to the west and including the northern part of the Bristol Channel.
- 4.3. The perceived character of the sea and coast is influenced by exposure to the prevailing south westerlies and Atlantic swells. It is also highly influenced by the tidal range which can exceed 8m and is the second highest in the world. The strongest currents tend to be to the east off Nash and Scarweather Sands where the tidal stream can reach 5 knots but there are races around headlands such as the Mumbles and Oxwich Point. Currents in the Loughor and the Three Rivers complex estuaries are also strong.
- 4.4. The depth of water reaches a maximum of 45m out in the Bristol Channel, but is generally less. A larger area of sand banks to the south west in medium depth water exhibits paleochannels from a period before the sea flooded the Bristol channel. The east-west aligned sandbanks at Helwick, Scarweather and Nash are submerged, forming navigational hazards relatively close to the coast. The strong currents of the Severn estuary to the south east result in exposed bedrock and coarser sediments. The large bays are generally very gently sloping and sandy with some mud, indicative of weak tidal streams. The rocky Gower coast has slightly steeper gradients to a seabed of sand and gravel. Between these major features there are smaller shoals and rocky features just below the water surface which also keep local sailors alert.
- 4.5. Located in the middle of the study area, Gower Area of Outstanding Natural Beauty (AONB), was designated for its classic coastline and outstanding natural environment. It was the first AONB in the UK, designated in 1956. 59km of its coastline is also classified as Heritage Coast. The area has a superb and varied coastline with many special qualities. The landscape character assessment of the area highlight the importance of the seascape and coastal features and associated views and perceptual qualities.
- 4.6. Dramatic Carboniferous limestone cliffs and landforms are a feature of Gower. The acute angled bedding of the limestone creates highly distinctive cliffs and landforms to the south west such as Worms Head which juts out from the most westerly point at Rhossili. There are associated jagged wave cut platforms and reefs interspersed with small sandy coves. Whilst many of the cliffs reach 50m high here, Pwll Du Head to the east is almost 100m AOD. The rock formation also results in the iconic cliffs in Three Cliffs Bay, set against the sweeping sands of Oxwich Bay.
- 4.7. Old Red Sandstone provides the distinctive rounded profile and backbone of the Gower peninsula including Cefn Bryn, Llanmadoc Hill and its imposing end stop at Rhossili Down which reaches the highest point in the peninsula, at 193m AOD. To the west, steep sided sandstone hills define the Three Rivers estuaries.

- 4.8. To the east, the slopes and hills of South Wales Coalfield plateau fringe Swansea Bay, notably Kilvey Hill and Mynydd Dinas. Though some of these hills are set back from the coastal edge they provide an important backdrop to the seascape.
- 4.9. There are some superb and extensive golden sandy beaches- most notably the exposed west facing Rhossili, and the more sheltered curving beaches at Oxwich, Three Cliffs and Port Eynon. Some beaches are extensive sand, like Cefn Sidan/Pembrey, while others are a mix of sand, muddy sand, rocks and biogenic reefs, such as Swansea.
- 4.10. This study area boasts two major estuaries- the Burry Inlet/Loughor Estuary and the Three Rivers Complex incorporating the Tywi, Taf and Gwendraeth. Between the two there is the largest sand and spit complex in West Wales. The outer sand bars with their shifting channels extend out into Carmarthen Bay.
- 4.11. There are major dune systems flanking estuaries flowing into Carmarthen and Swansea bays, and behind most of the major beaches. One of the largest in Wales is at Kenfig, where the dunes extend far inland.

Nature conservation

- 4.12. Many parts of the study area are important for nature conservation. Marine interest tends to be to the west, but coastal habitats provide interest virtually throughout. Carmarthen Bay and Estuaries European Marine Site comprises of the Special Area of Conservation (SAC), Carmarthen Bay Special Protection Area (SPA) and Burry Inlet SPA and RAMSAR site. The Carmarthen Bay SAC encompasses areas of sea, coast and estuaries and supports a wide range of different marine habitats and wildlife, some of which are unique in Wales. Habitats include the sub-tidal sandy seafloor including sandbanks, with the full transition from marine to terrestrial habitats including mudflats, sand flats, salt marshes, salt meadows and sand dunes. The estuaries provide migratory routes for salmon, sewin, lamprey and shad.
- 4.13. The Burry Inlet SPA is of interest as its estuarial salt marshes and intertidal areas regularly supports at least 20,000 waterfowl including curlew, dunlin, grey plover, shelduck, shoveller, teal, turnstone and wigeon. Migratory species include oystercatcher in particular, pintail, knot and redshank. Carmarthen Bay SPA is the most important site for the migratory common scoter in the UK. It is also an Important Bird Area holding 33,000 over-wintering water birds including the scoter on a regular basis.
- 4.14. The Bristol Channel Approaches possible SAC for Harbour Porpoise extends into Carmarthen Bay. Research has shown that this smallest UK marine mammal is evident in a series of 'hotspots' further east along the south Gower Coast off headlands and in Swansea Bay in dredged tidal channels.
- 4.15. The rocky south western Gower coast is part of the Limestone Coast of South West Wales SAC. Part of this is covered by Gower Coast National Nature Reserve and South Gower Nature Reserve. The other National Nature Reserves focus on dune systems at Whiteford Burrows, Oxwich and Kenfig Pool and Dunes. These are of outstanding importance for their rare coastal plants.
- 4.16. Much of Gower Coast is designated as SSSI. Key coastal habitats include the intertidal rocks and adjacent cliffs which are rich in invertebrates. There are intertidal wave cut platforms supporting honeycomb worm reefs along the south Gower coast, especially at Pwlllddu Point. There is exposed maritime grassland such as on Worms Head, and semi-natural coastal heath and grassland communities on cliff tops. Worms Head, and to a lesser extent the cliffs to the east, support seabirds such as chough, kittiwake, razorbill and puffin found more often further to the west. The incised valleys contain blackthorn and hazel

scrub. Seals are noted along the Gower peninsula coast with haul outs at Worms Head and Pwll Du beach. Pods of dolphins are occasionally sighted by lucky visitors.

Cultural Influences

- 4.17. The Registered Landscapes of Outstanding Historic Interest in the Taf and Tywi Estuary, Gower and Kenfig and Margam Burrows indicate the historical importance of the area.
- 4.18. Gower exhibits archaeological sites for most periods from the occupied Upper Palaeolithic caves through to mediaeval castles and industrial monuments. The most dramatic evidence of the Palaeolithic period are remains found at Goat's Hole Cave, Paviland, and at Longhole and Deborah's Hole on the remote south-west coastal cliffs. These once overlooked hunting grounds on the coastal plains, now covered by the sea.
- 4.19. Some of the paleolandscapes on the seafloor throughout the study area have significant potential for finds from this period, and survey work continues to research these. There are also fossilised forests with tree stumps now exposed on several beaches such as Broughton Bay and Swansea Bay.
- 4.20. At Kenfig, the sand dunes advanced inland in the late medieval period due to bad weather and abnormal tides burying the castle and fortified borough of Kenfig and its port which were located on a former estuary along a former Roman road.
- 4.21. The Taf and Tywi area contain diverse evidence of activity from the prehistoric period onwards, including mediaeval towns and castles and 17th-century land reclamation.
- 4.22. Many coastal buildings and structures contribute to the maritime history and character of the coast and most are listed. The Mumbles lighthouse provides the natural focus for Swansea Bay located on the distinctive profiles of the Mumbles. The disused Victorian Whiteford lighthouse in the exposed and remote Burry Inlet is one of the last cast iron lighthouses in Europe, along with Porthcawl. The functioning lighthouse at Porthcawl is much photographed, particularly in dramatic weather and sea conditions with the waves breaking high above the structure. There are many remains of prehistoric promontory forts, such as at Burry Holms. More prominent are medieval castles at Llansteffan, Laugharne, Oxwich and Oystermouth which occupy strategic locations along the coast.
- 4.23. Old harbours and disused docks at Llanelli, Swansea, Port Talbot, Briton Ferry and Burry Port illustrate past trade with south west England and the world beyond. Some docks exported coal and limestone while others were best known for other goods, such as copper in Swansea- once known as 'Copperopolis' and tinned goods at Llanelli - 'Tinopolis'. Trade routes linked Swansea to South America and South Africa, sources of the ore.
- 4.24. Wrecks can still be seen around the coast, reminding the visitor of the treacherous nature of the waters. The notorious Carmarthen Bar and Cefn Sidan sands feature a concentration of wrecks, such as the Teviotdale, wrecked in 1886. The Helvetia, wrecked the year after, is exposed at low tide in Rhossili Bay. The scattered remains of the Santampa, a World War II liberty ship, lie off Sker Point, near Porthcawl. A number of other wrecks lie around the coast, on the approaches to the estuaries and harbours including the Carmarthen Bar and in Swansea Bay. These include ocean going vessels serving the ports, fishermen's boats and aircraft from the World War II.

- 4.25. The poet, Dylan Thomas, is strongly associated with Laugharne where he lived in the latter part of his life, but he was born in Swansea. His writings were influenced by many places in and around the area. Other poets have also been inspired by the seascapes. There are many paintings of the coast, such as Sisley's paintings around Langland Bay and Sir Kyffin Williams along Gower coast.
- 4.26. Burry Port has a place in history as Amelia Earhart, the first woman to fly across the Atlantic Ocean, landed her plane 'Friendship' to complete the trip in the waters off the town in 1928.

Use

- 4.27. The area is located at the busy mouth of the Bristol Channel and remains well used although the amount of commercial traffic has reduced since the relative deindustrialisation of the coastal strip. Currently the busiest port is the deep water tidal harbour at Port Talbot, related to the steelworks, although the docks at Swansea and Briton Ferry are still used for a variety of cargoes. Vessels sometimes moor in the calmer deep water southern approaches to Swansea Bay to await the high tide for both Port Talbot and Swansea Docks. They then use the dredged channels to the three docks.
- 4.28. Some sandbanks such as Helwick and Nash are licensed for dredging/aggregate extraction but this is currently only carried out in the outer Bristol Channel to the far south west.
- 4.29. The Swansea Bay Tidal Lagoon, designed to harness the power of the tides, is reaching the final stages of the planning/licensing process. If implemented it will significantly change coastal processes and the pattern of use in the bay, as well as its seascape character, effectively dividing the bay into three parts.
- 4.30. A small fleet of three commercial fishing boats are based in Swansea but the area is also fished by larger boats from South West England ports and also from other European nations. Lobster and bass are important catches. Mussel and cockle beds in Burry Inlet and the Three Rivers Complex are hand harvested and processed locally at Penclawdd.
- 4.31. Leisure boat fishing is especially popular along the south Gower coast between Worms Head and Oyster ledge, with boats mainly emanating from Swansea but also Burry Port and elsewhere. The main catches are bass and tope in the summer and rays, conger, whiting (and dogfish) in winter.
- 4.32. The waters around Swansea Bay and south Gower are very popular for boating. Leisure cruisers are based mainly in the Swansea marinas but there are smaller marinas, harbours and moorings such as Burry Port, Porthcawl and Monkstone. Cruising routes pass through to Tenby to the west, Cardiff to the east and across the Bristol Channel. The southern coast of the Gower peninsula is generally not a place to linger for sailing boats due to its exposed character but is popular for kayaking and a rib operating out of Oxwich Bay offering wildlife trips in season. Rowing is a growing pastime in the Tywi and Swansea Bay. Jet skis are generally unpopular with other users but are permitted from locations such as Newton and Burry Port.
- 4.33. There are hugely popular large beaches acting as honeypots for holidaymakers and locals. The Rough Guide rated Rhossili as the best beach in Wales, followed by Cefn Sidan, which is Wales' longest beach at around 13km at low tide. Rhossili, Oxwich and Port Eynon in Gower and Sandy Bay and Trecco Bay at Porthcawl are all popular with holidaymakers. Aberafan and Pembrey beaches tend to be used more by locals- although in reality there is a mix. Langland and Caswell Bays are more confined beaches, packed in season. Whilst informal beach activities and swimming are the largest uses, some beaches are

- particularly popular for surfing, such as Rhossili, and for a variety of other water and beach sports, such as windsurfing.
- 4.34. The rocky coasts are popular for climbing, abseiling, wildlife watching, walking and for more adventurous surfers.
 - 4.35. Caravan and campsites dot the coast ranging from the largest in Europe at Trecco Bay at Porthcawl to the east through to sites on Gower and around the Three Rivers complex. These can be noticeable and detractive elements visible both along the coast and from out to sea.
 - 4.36. The coastline is closely followed by the Wales Coast Path for much of its length. The only exceptions are the MoD practice area at Pembrey, the Port Talbot steelworks and land associated with the docks and former oil storage areas in Swansea Bay.
 - 4.37. The National Trust owns large tracts of coastline on Gower, including Rhossili and its car park, with much of the land being open access land.
 - 4.38. Carmarthen Bay has long been the focus for the military due to possible vulnerability of the coast to invasion which required coastal defences, but also through historic armament manufacture at Pembrey. The MoD use the dunes at Pembrey to this day for air to ground/sea target practice. The attendant noise and movement of the aircraft affects the tranquillity over the wider area when the site is occasionally active.
 - 4.39. Whilst Swansea Bay is largely developed there are areas of open and natural landscape such as Kenfig dunes and around the Neath Estuary. Development is much more limited in Gower, being more concentrated the east, where incremental development is impinging on the coast line in parts. The Burry Inlet exhibits a great contrast between the developed northern edge around Llanelli and the remote southern landscape on Gower, of salt marshes backed by steep slopes. The Three Rivers complex is essentially a rural landscape with clustered settlements.

Aesthetic and Perceptual Influences

- 4.40. As with all seascapes, the character depends very much on the weather and sea conditions. In the summer, the sea can be dead calm with only a breath of wind and the visitor can perceive great calmness and tranquillity. In poor weather winds can be high and with a strong Atlantic swell the sea can be an exposed and unforgiving place. The common factor is that the sea is a wild, open and largely unspoilt area, usually allowing expansive views, unifying the diverse coastal character.
- 4.41. The coastal edge itself can enhance the experience of seascape and the intertidal areas can change dramatically with the very high tidal range. The vast complex estuaries and sand bars and the simple, gently sloping beaches are covered in a few hours, transforming their character, providing ever-changing light and movement. In Swansea Bay the sweep of sandy beaches currently unify the bay and the various built forms which are located around it. This is particularly enjoyed by the many users of the coastal corniche/promenade.
- 4.42. The scale of the coast varies widely between the wide Swansea and Carmarthen bays and the estuaries, the intermediate bays such as Oxwich and Port Eynon and the small coastal coves such as Pwll Ddu.
- 4.43. The seascapes have added interest where there are other land masses in the view. Exmoor and Lundy Island are visible from the southern parts of the coast in good visibility. The large scale Carmarthen and Swansea Bays have views across to Caldey Island and the Mumbles respectively. The views of Rhossili from Worms

- Head and of Three Cliffs Bay are stated by some as among the best coastal views in Wales, if not the UK.
- 4.44. Man made structures are generally subservient to the landform. However, the huge and impressive scale of the Port Talbot steelworks with its intermittent plumes of steam is visible across the bay against the dark backcloth of the South Wales coalfield plateau scarp slopes. The built slopes of Townhill in Swansea are also a strong visual feature and wind farms are beginning to impinge on the skyline.
- 4.45. Lighting is concentrated to the east with the many lights of the Port Talbot steelworks and Swansea visible across the bay. The urban area is also apparent spilling over into the Gower peninsula to an extent. Features such as the golfing range in Llanelli is surprisingly visible across the estuary, disturbing the otherwise dark area of the estuary. Much of Gower and southern parts of the Three Rivers Complex are relatively dark, with only limited settlement and light disturbance.
- 4.46. The western part of the Gower peninsula, the mouth of the Three Rivers Complex are classified as undisturbed areas in terms of tranquillity. The south west Gower is particularly inaccessible and remote. Cefn Sidan Sands and the mouth of the Loughor estuary at Whiteford are wild, exposed areas where natural elements dominate.
- 4.47. The coast has a varied and strong sense of place contributed to by both the natural features such as rocky coastlines, headlands, beaches and estuaries and the mark of man such as the castles, lighthouses, harbours, ports and peninsula forts.
- 4.48. The figures on the following pages show the general patterns and constraints within the study area.

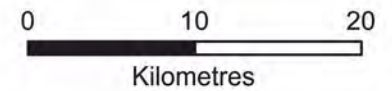


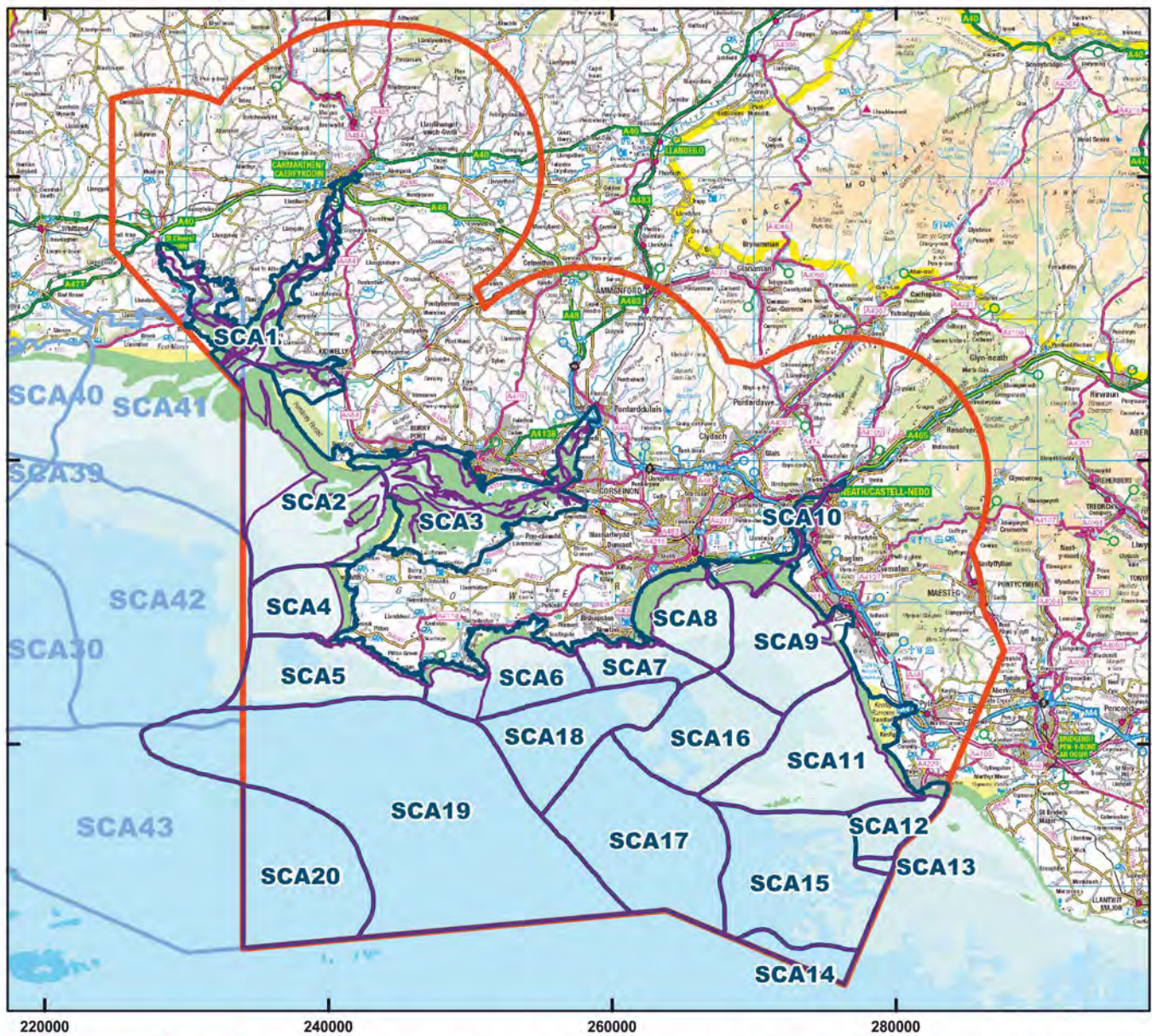
People regularly use and enjoy the promenade around Swansea Bay



Key

- Study Area
- Administrative Boundary



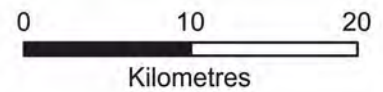


Key

- Seascapes Character Types
- Carmarthen Bay, Gower and Swansea Seascapes Character Areas
- Pembrokeshire Seascapes Character Areas
- Study Area

Bathymetry

- Drying
- <=10m
- <=20m
- <=50m
- <=100m

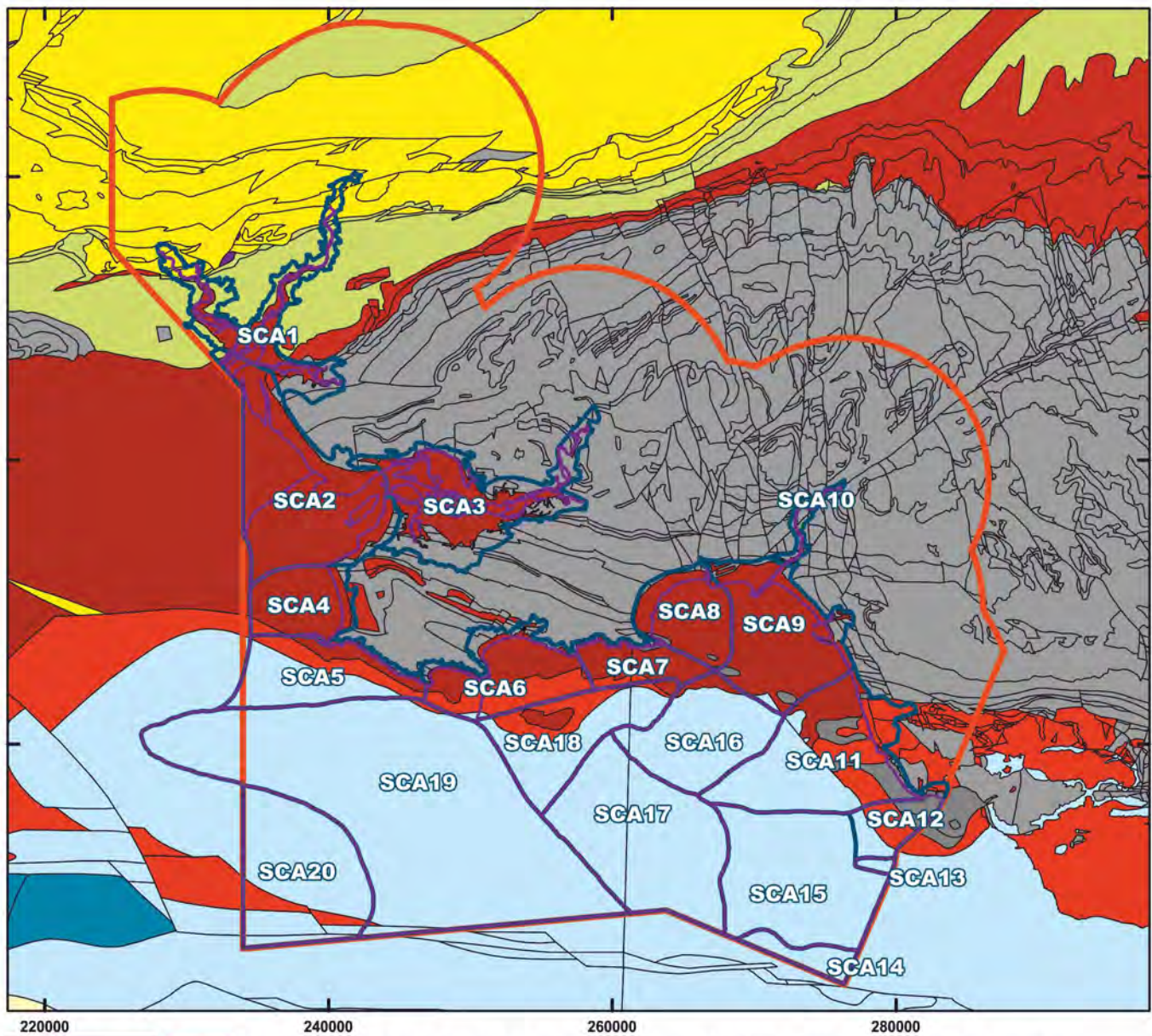


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Project: Carmarthen Bay, Gower and Swansea Bay Local Seascapes Character Assessment
 Client Group: CCC, CCS, NPTCBC, BCBC, NRW.
 Date: August 2017

Figure 2 : Bathymetry & Topography



Key

- Seascape Character Types
- Seascape Character Areas
- Study Area

Bedrock Offshore

- PALAEOGENE
- CRETACEOUS
- JURASSIC
- TRIASSIC
- CARBONIFEROUS
- DEVONIAN
- ORDOVICIAN

Bedrock Onshore

- JURASSIC
- TRIASSIC
- CARBONIFEROUS
- DEVONIAN
- SILURIAN
- ORDOVICIAN
- IGNEOUS INTRUSION

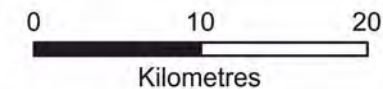
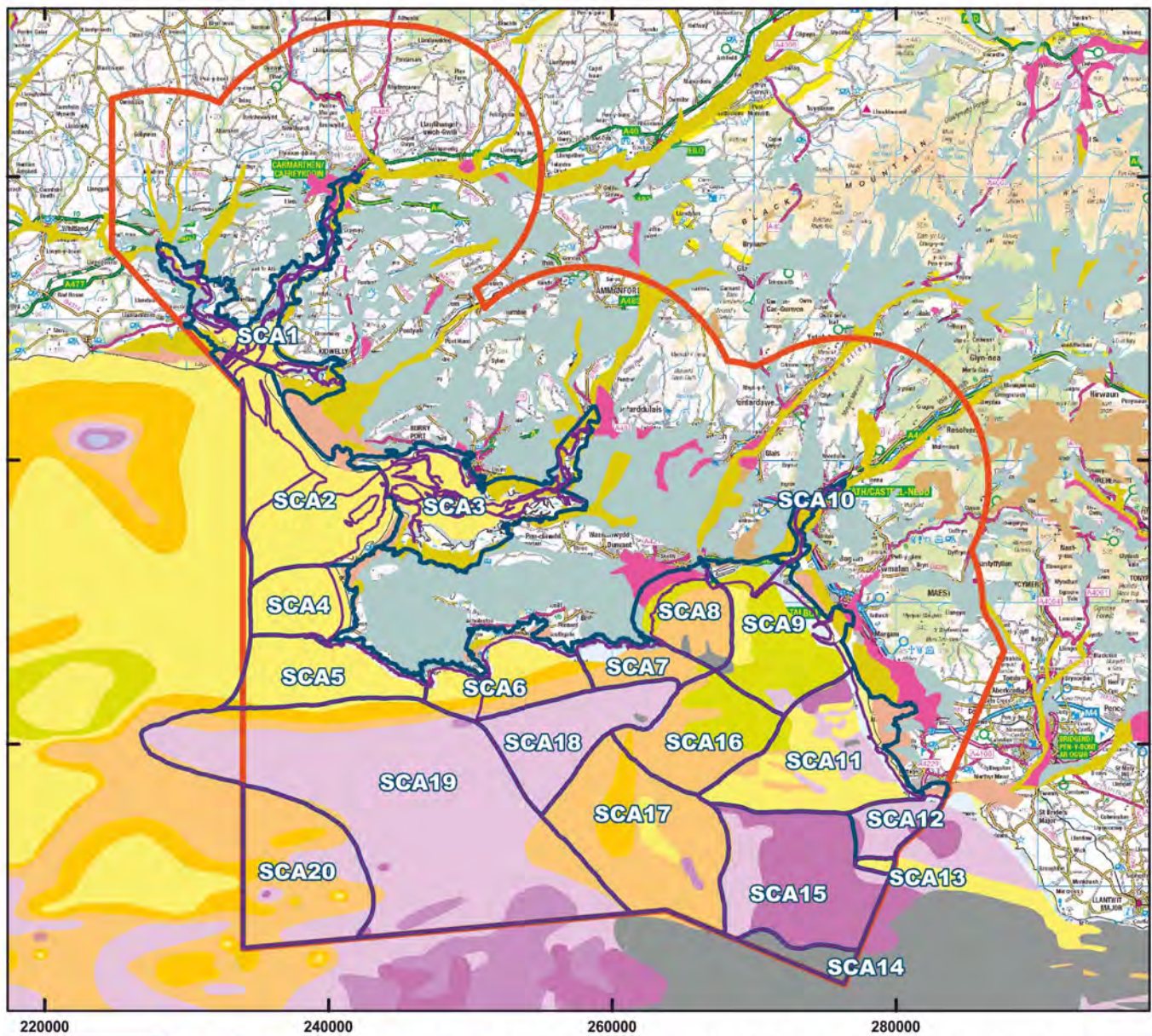


Figure 3: Geology and Seabed Geology



Key

- Seascape Character Types
- Seascape Character Areas
- Study Area

Superficial Land Geology

- CLAY, SILT AND SAND
- DIAMICTON
- PEAT
- SAND
- SAND AND GRAVEL
- UNKNOWN LITHOLOGY

Sediments Offshore

- UNDIFFERENTIATED BEDROCK LITHOLOGY
- SANDY GRAVEL [MARINE SEDIMENT]
- GRAVELLY MUDDY SAND [MARINE SEDIMENT]
- GRAVEL [MARINE SEDIMENT]
- GRAVELLY SAND [MARINE SEDIMENT]
- MUDDY GRAVEL [MARINE SEDIMENT]
- MUDDY SANDY GRAVEL [MARINE SEDIMENT]
- MUDDY SAND [MARINE SEDIMENT]
- SANDY MUD [MARINE SEDIMENT]
- SLIGHTLY GRAVELLY SAND [MARINE SEDIMENT]
- SAND [MARINE SEDIMENT]

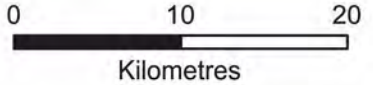
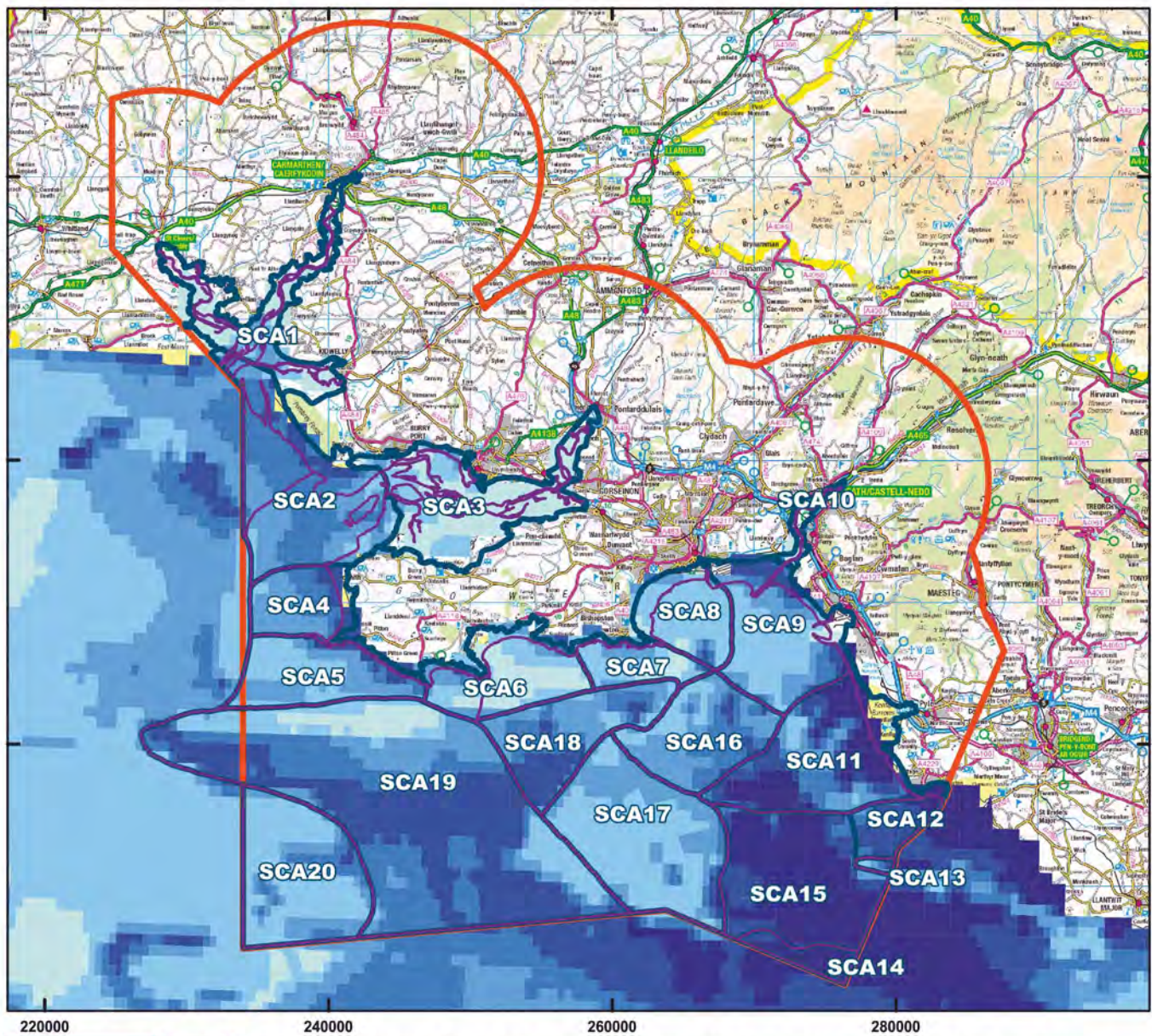


Figure 4: Geology and Seabed Sediments



Key

- Seascape Character Types
- Seascape Character Areas
- Study Area

Wave Climate/Stress

- 1 Extremely Sheltered
- 2 Very Sheltered
- 3 Sheltered
- 4 Moderately Exposed
- 5 Exposed
- 6 Very Exposed
- 7 Extremely Exposed

Note:

The wave climate or stress dataset is a composite dataset combining wave height, direction and period over time relating to wind/wave exposure (fetch), tidal and current conditions, wave and tidal stresses, and bathymetry. This dataset was provided by NRW and was determined by others using a high resolution wave model verified from qualitative field data. There may be local anomalies due to averaging.

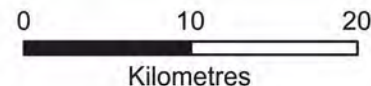
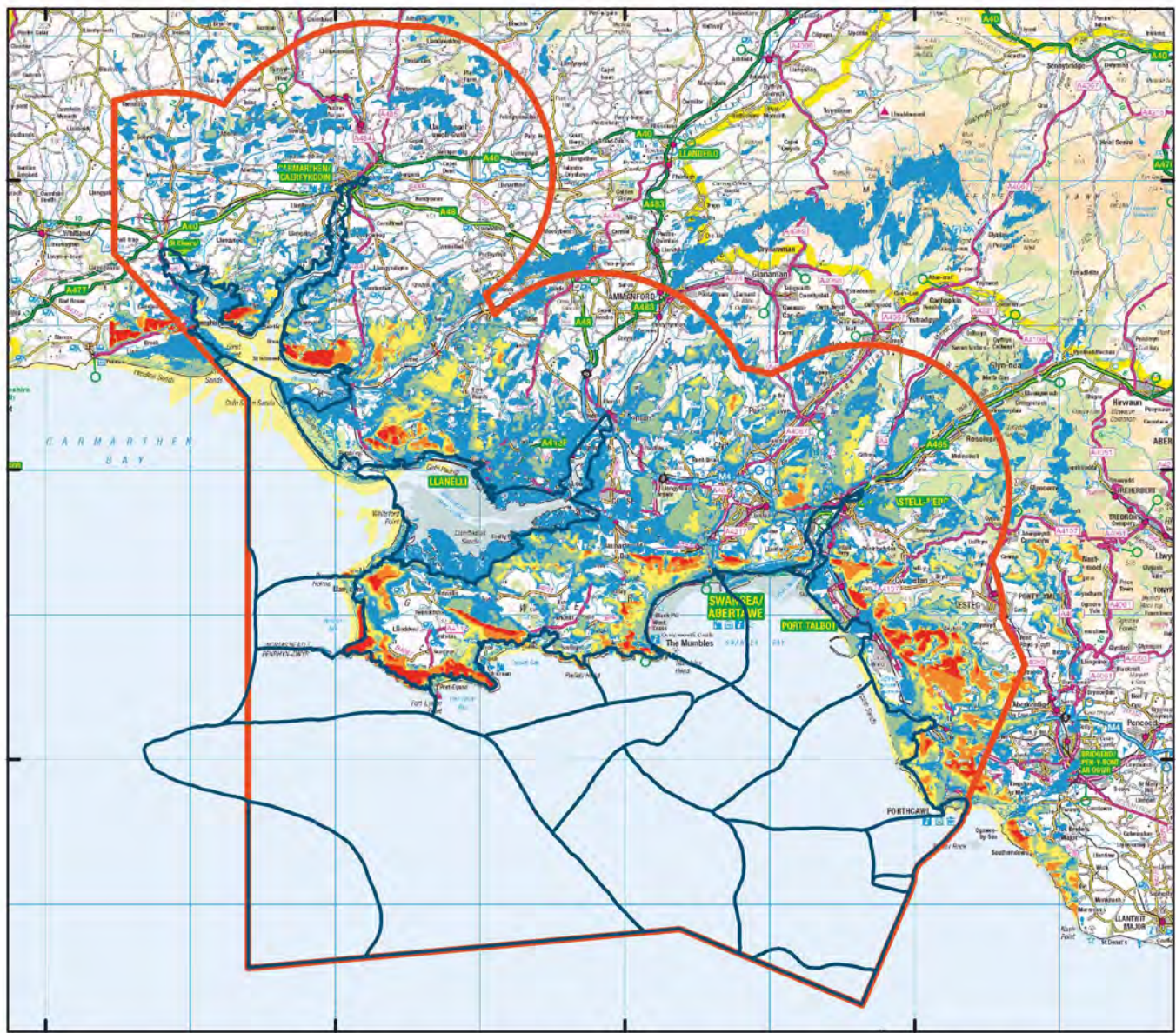


Figure 5: Wave Climate



Key

- Seascape Character Areas
- Study Area

Relative visibility of the sea

- Low
- Low - Med
- Med
- Med - High
- High

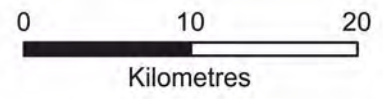
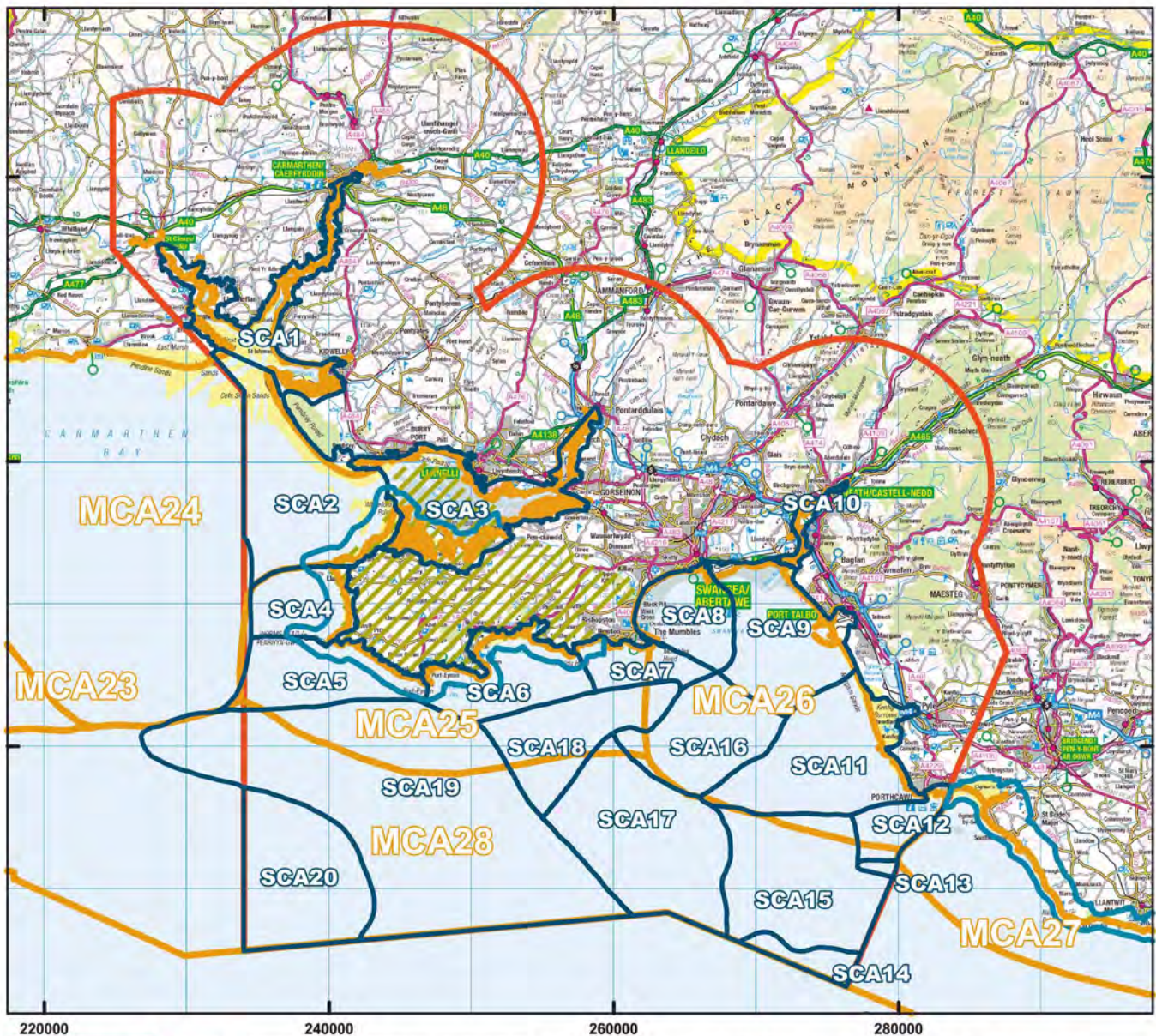







Figure 6: Intervisibility with the land



Key

-  Heritage Coast
-  Seascape Character Areas
-  National Marine Character Areas
-  AONB
-  Study Area

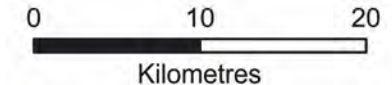


Figure 7 : National Marine Character Areas and Landscape Designations



Key

-  Study Area
-  SSSI
-  SPA
-  SAC
-  c SAC
-  NNR
-  RAMSAR

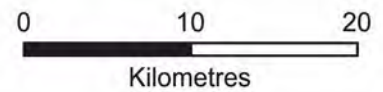
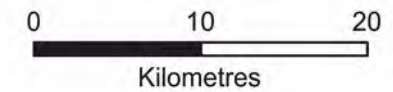


Figure 8: Biodiversity and Geological Designations



Key

-  Study Area
-  Cadw listed buildings
-  Wrecks
-  Scheduled monuments
-  Registered Landscapes of Historic Interest
-  Historic Parks & Gardens

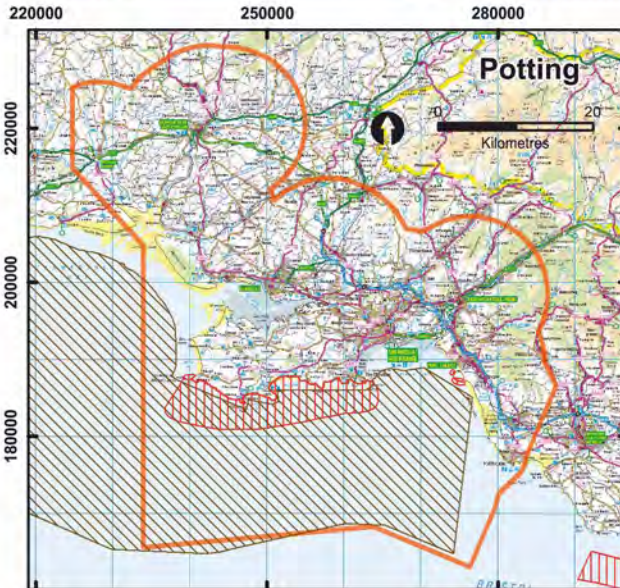
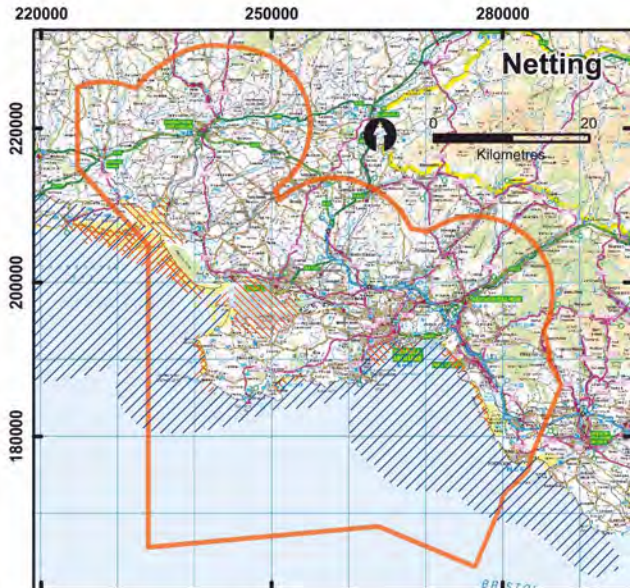
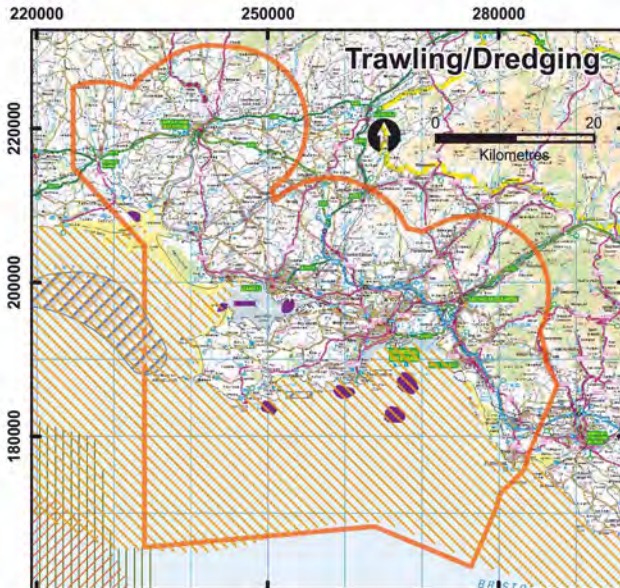


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Figure 9 : Heritage



Trawling/Dredging

- Type 5c Shrimp Trawling
- Type 5b Light Beam Trawling
- Type 5a Light Otter Trawl
- Type 1a Heavy Beam Trawling
- Type 4a Otter Trawl
- Type 6a Hydraulic Dredging
- Type 3a Mussel Seed Dredging
- Type 1c Scallop Dredging (Queen Scallops)
- Type 1b Scallop Dredging (King and Queen Scallops)

Netting

- Type 8d Beach Seining
- Type 8c Beach Nets
- Type 8b Set Nets

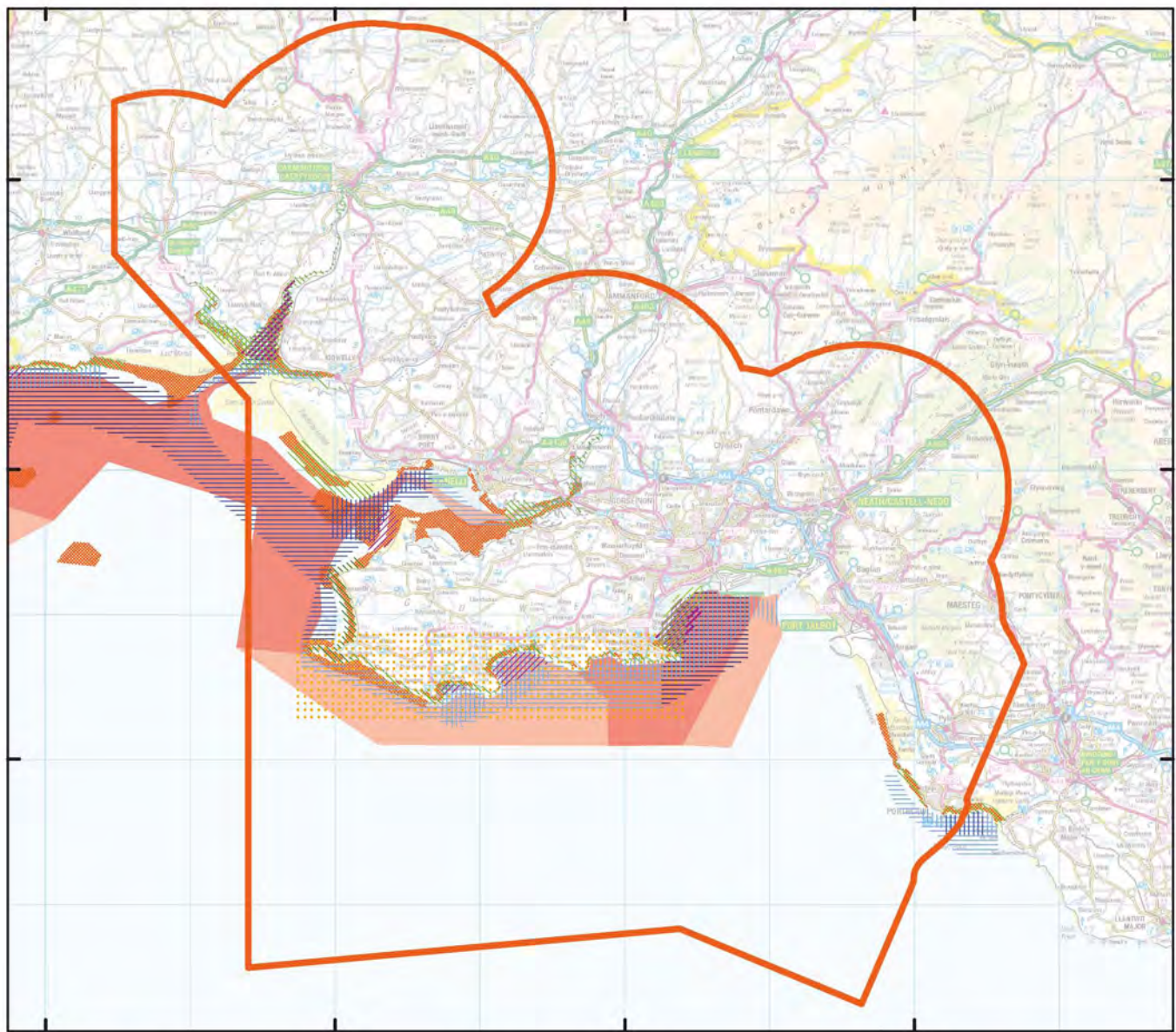
Potting

- Prawn
- Whelk
- Lobster & Crab

Line fishing and coastal shellfish

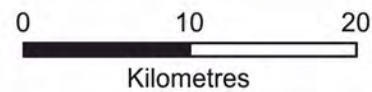
- Type 8a Longlines
- Type 7c Drift Lines
- Type 7b Commercial Rod and Line
- Type 7a Handlines
- Type 13b Oyster Cultivation
- Type 11d Hand Gathering-Razor Clams
- Type 11c Hand Gathering-Periwinkles
- Type 11b Hand Gathering-Mussels
- Type 11a Hand Gathering-Cockles

Note: These maps are broad brush and are derived from the Sea Fishing Atlas of Wales, Countryside Council for Wales, 2010. They cover the period 2000-2005 and have been prepared primarily on the basis of anecdotal comments received from regulators and fishermen, supplemented by information contained in published reports. There is no indication of the frequency or level of effort deployed. Some activities such as hydraulic dredging are not currently licensed or active.



Key

- Study Area
- Rowing**
 - low - med
 - med - high
- Kayaking**
 - low
 - med
 - high
- Dinghy Sailing**
 - low - med
 - med - high
- Wildlife Boat Trips**
 - low
 - med
 - high
- Sea Angling
- Jet Ski**
 - low
 - med
- Power Boats**
 - low
 - med
 - high
- Cruiser Sailing**
 - low
 - med
 - high



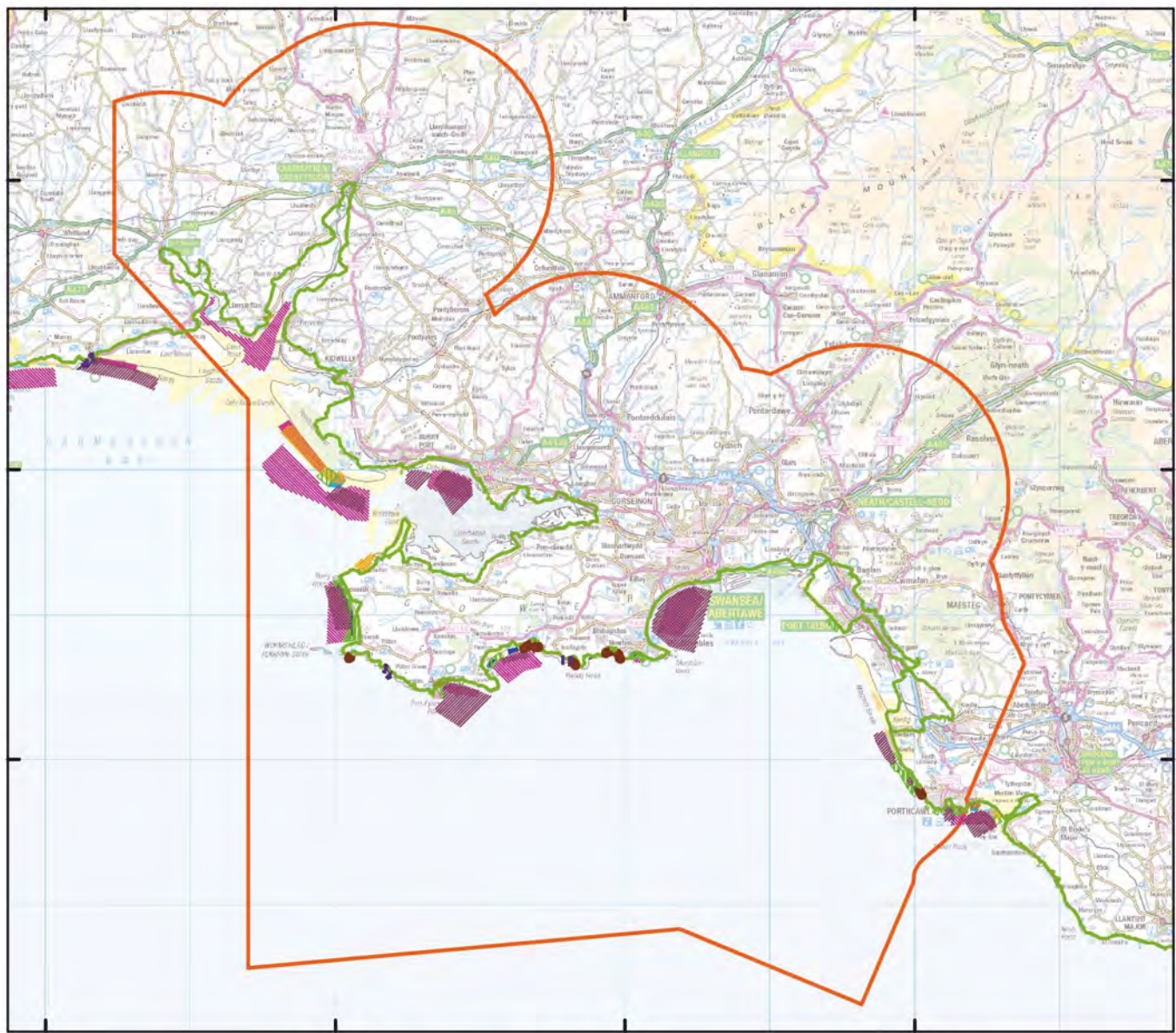
220000 240000 260000 280000 180000 200000 220000



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Figure 11: Recreational Activity - Marine



Key

- Wales Coast Path
 - Study Area
 - Caving & potholing
 - Climbing
 - Coasteering
 - Windsurfing
 - Kite surfing
 - Land yachting
-
- #### Beach activities
- Very Low
 - Low
 - Medium
 - High
 - Very High
- #### Swimming
- Very Low
 - Low
 - Medium
 - High
 - Very High
- #### Surfing
- Low
 - Medium
 - High
 - Very High

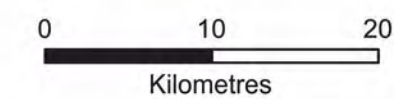
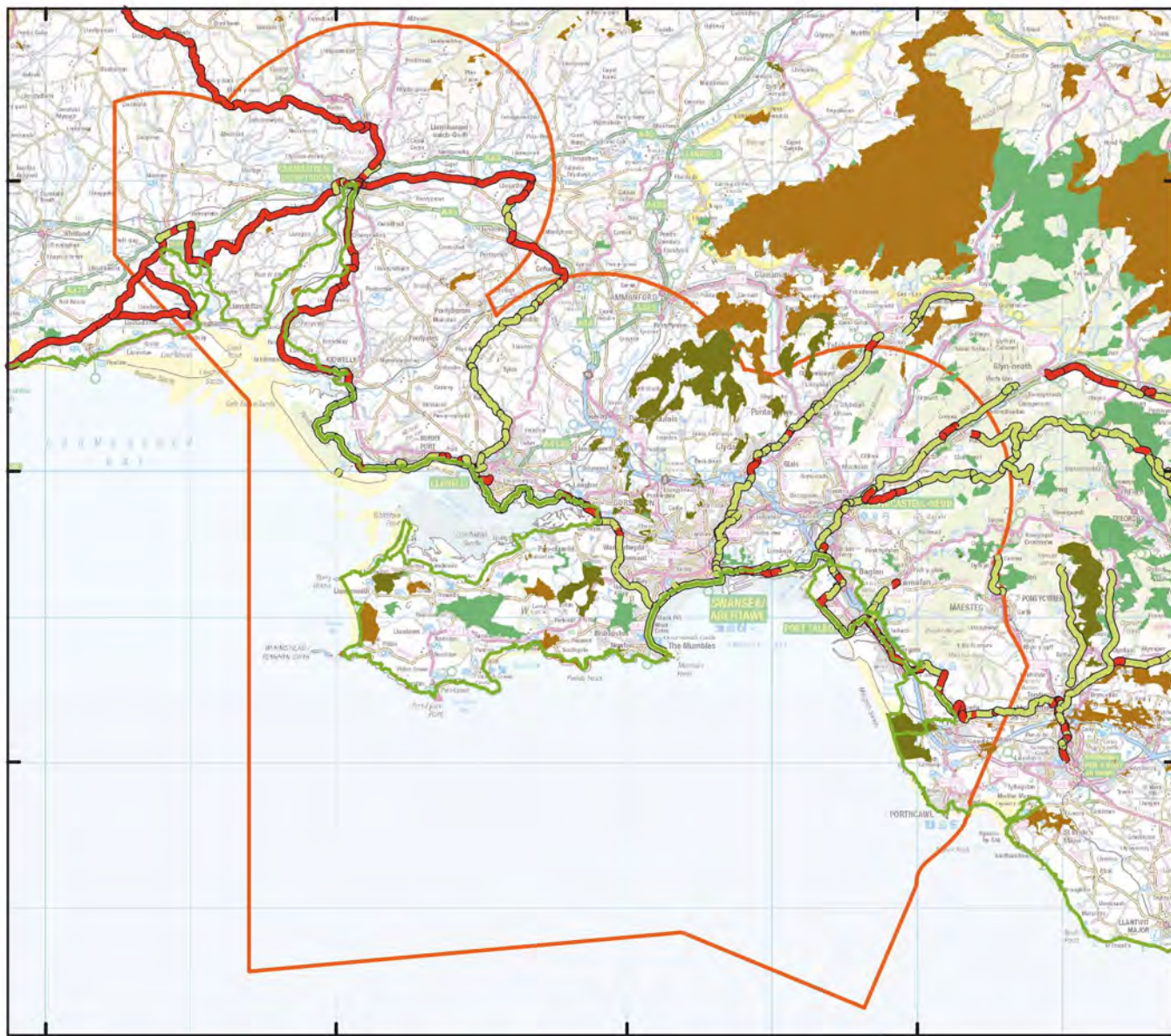
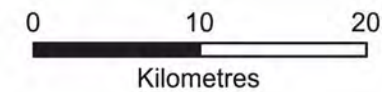


Figure 12: Recreational Activity - Coast



Key

- Wales Coast Path
- Cycle Routes**
- Off Road
- On Road
- Registered Common Land
- Other Common Land
- CRoW Access Land
- Study Area



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180000 200000 220000

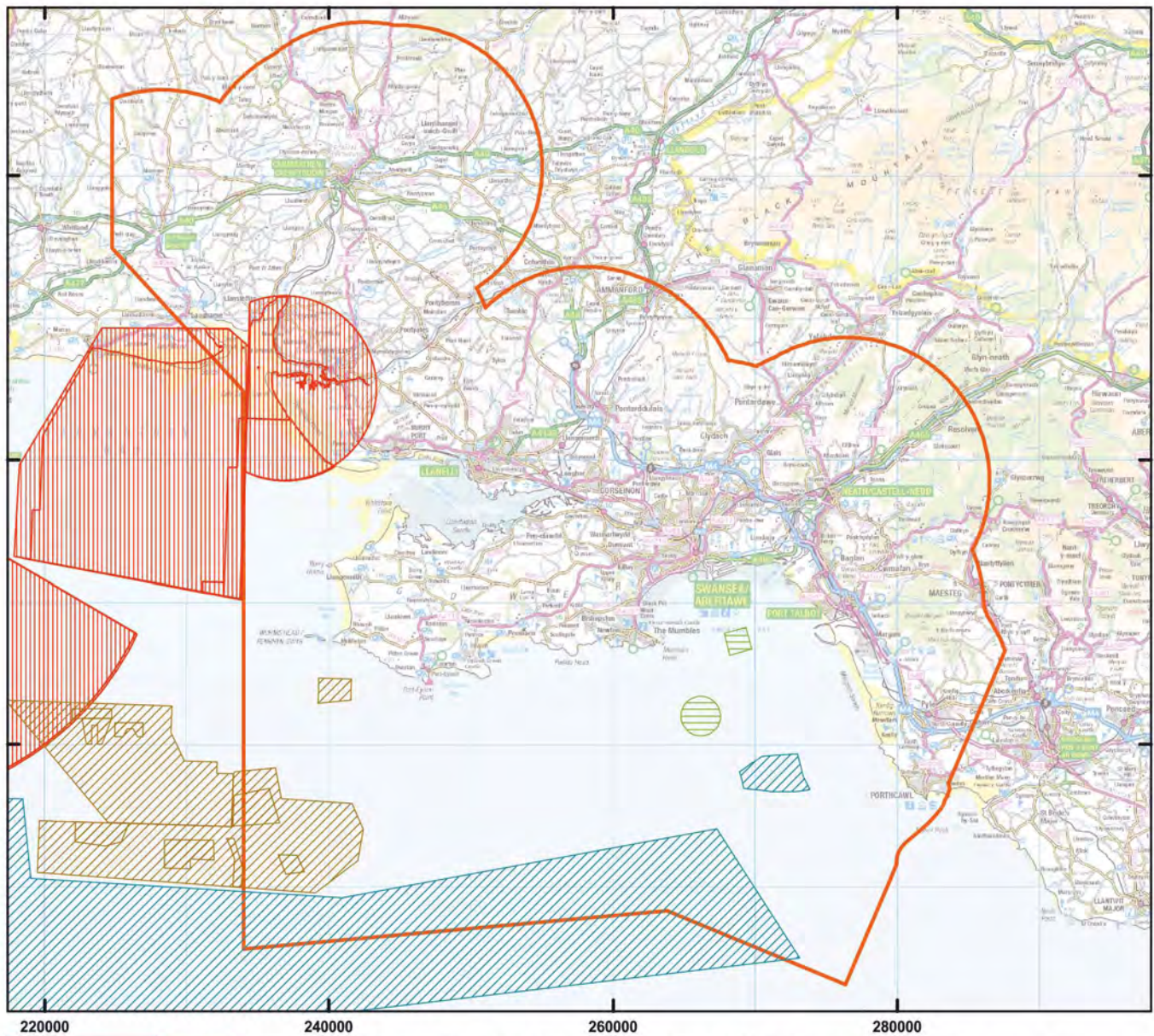


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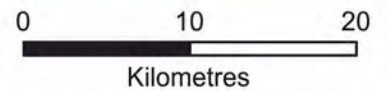
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Figure 13 : Access

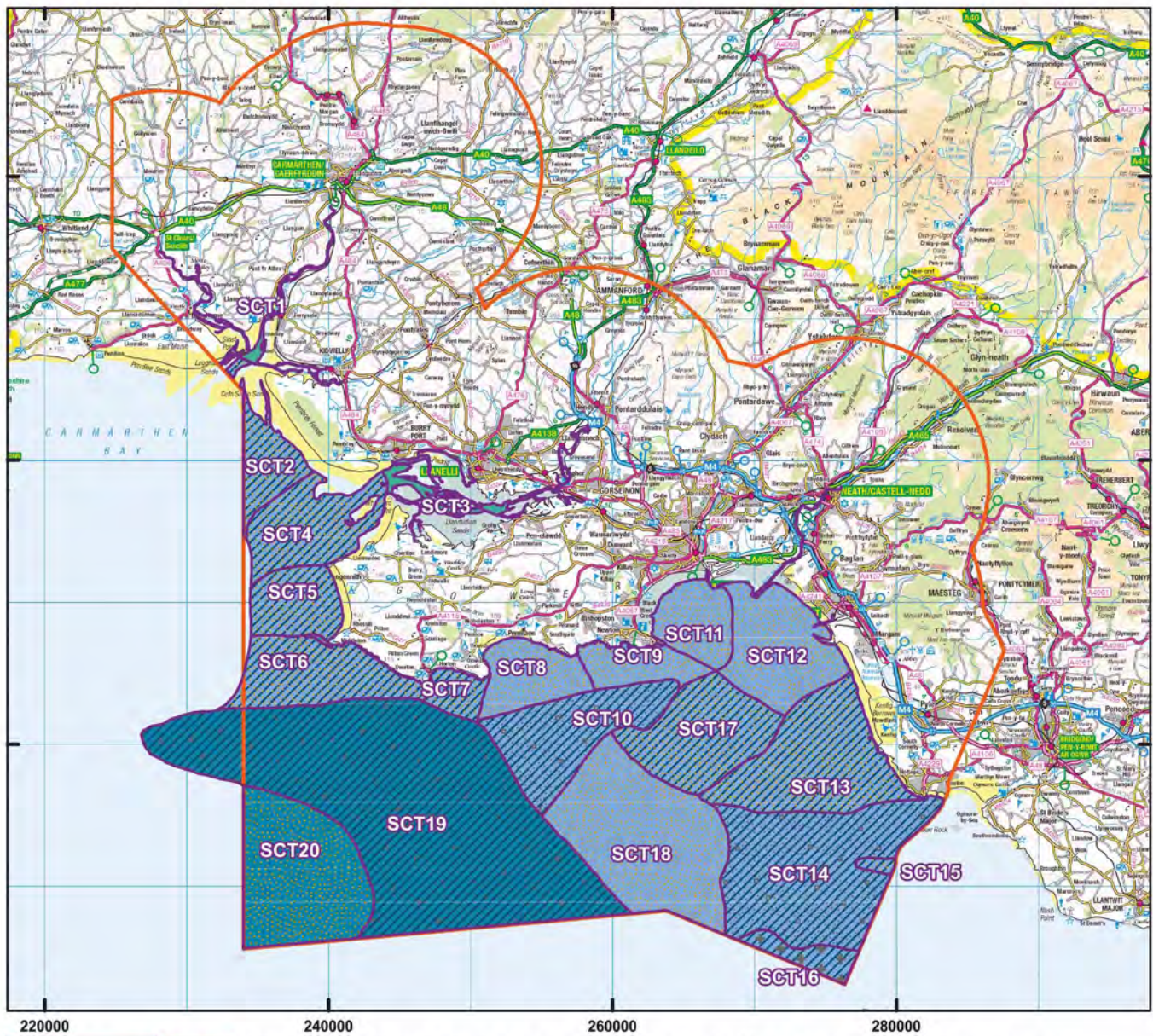


Key

-  Licenced Dredging Area
-  Licenced Wind Farm Area
-  MOD Practice Area
-  Dumping Ground
-  MOD
-  StudyArea



**Figure 14 : Commercial
and Military Activity**



Key

Seascape Character Types

Study Area

Marine Type

Tidal channels, estuary

Shallow water/sand sea bed/low wave stress

Shallow water/sand sea bed/low wave stress

Shallow water/ rock sea bed/ high wave stress

Shallow water/ gravel sea bed/ high wave stress

Shallow water/sand sea bed/high wave stress

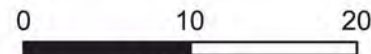
Medium depth/sand sea bed/low wave stress

Medium depth, gravel sea bed, high wave stress

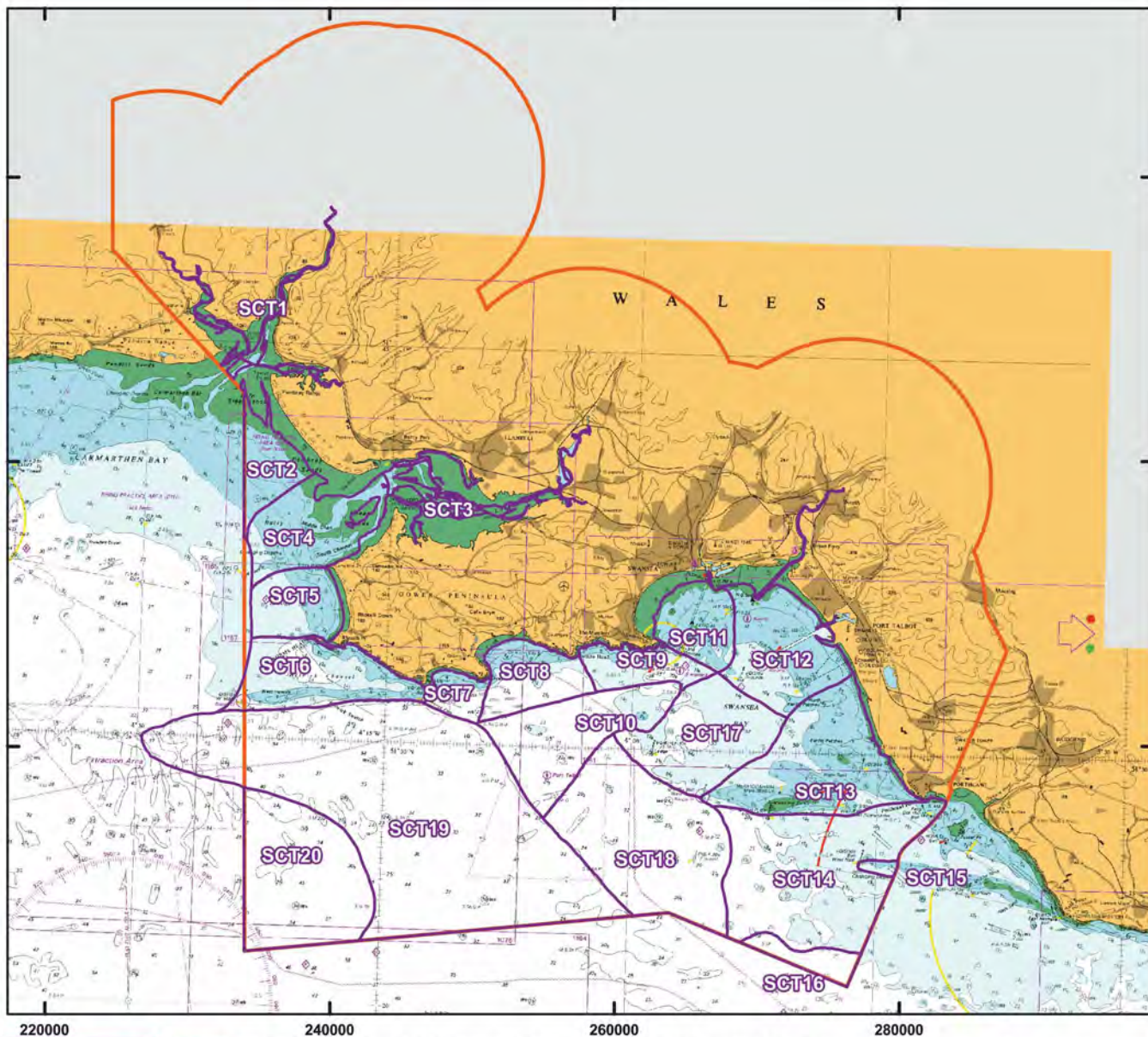
Note:

High wave stress- categories 4-7 in Figure 5.

Low wave stress- categories 1-3 in Figure 5.



Kilometres



Key

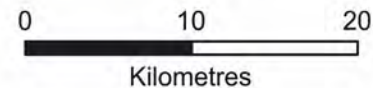
- Seascape Character Types
- Study Area

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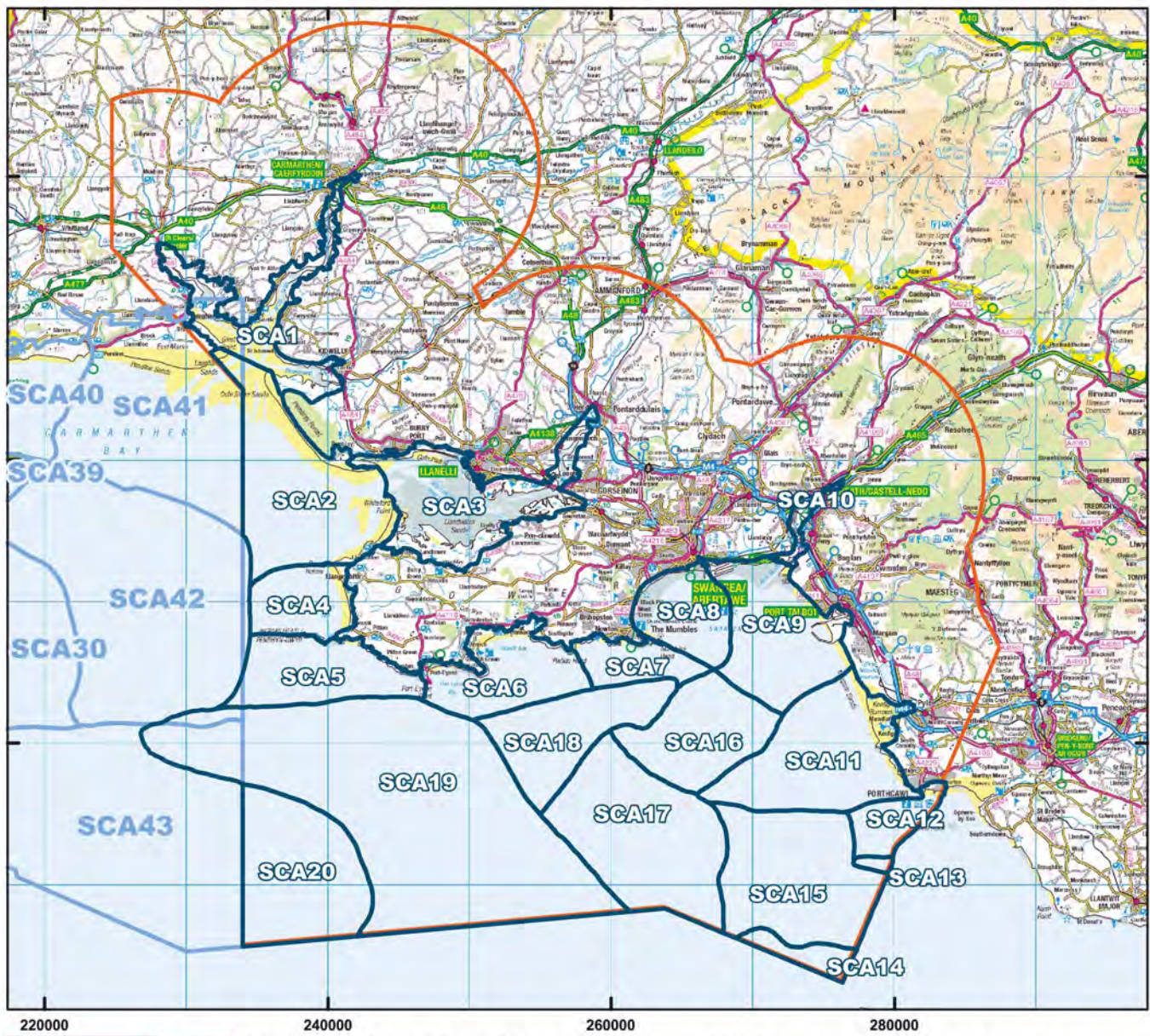


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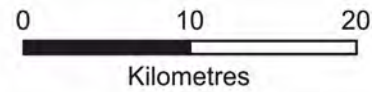
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Figure 16 : Seascape Character Types- Marine



Key

- Carmarthen Bay, Gower & Swansea Bay Seascape Character Areas
- Pembrokeshire Seascape Character Areas
- Study Area

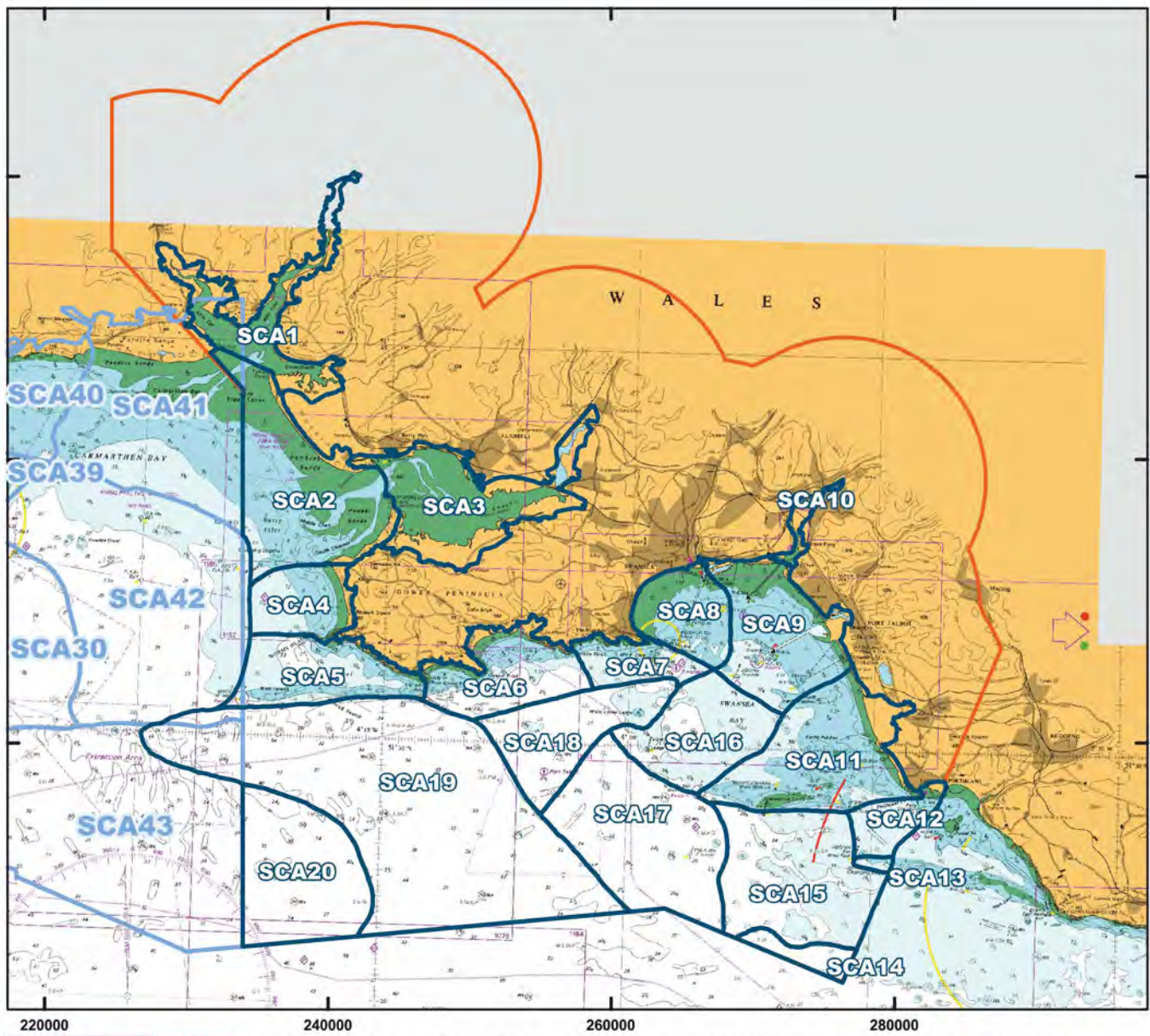


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Figure 17 : Seascape Character Areas

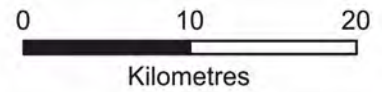


Key

- Carmarthen Bay, Gower & Swansea Bay Seascape Character Areas
- Pembrokeshire Seascape Character Areas
- Study Area

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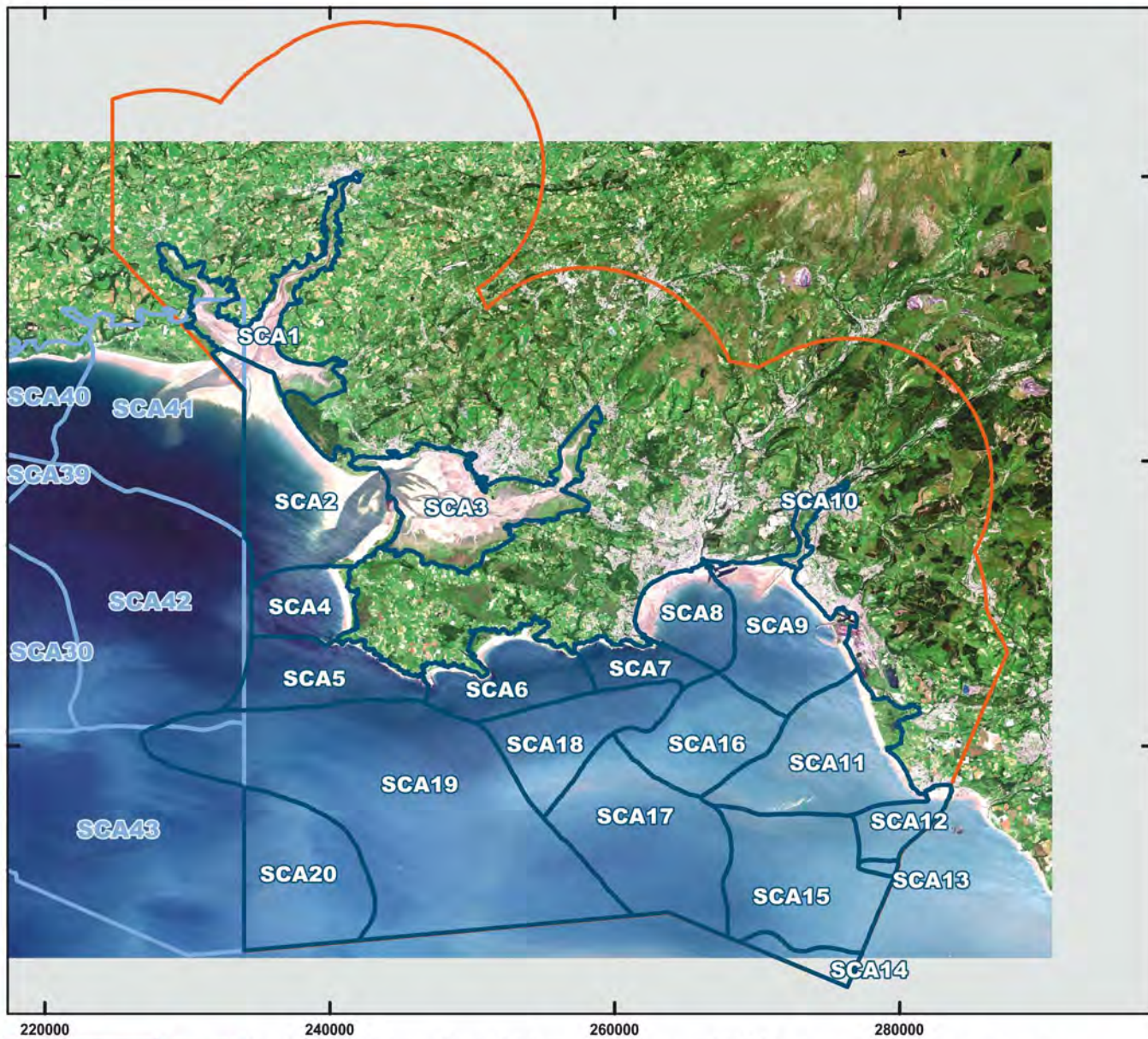


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Figure 18 : Seascape Character Areas



Key

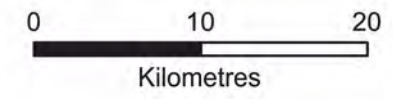
- Carmarthen Bay, Gower & Swansea Bay Seascape Character Areas
- Pembrokeshire Seascape Character Areas
- Study Area

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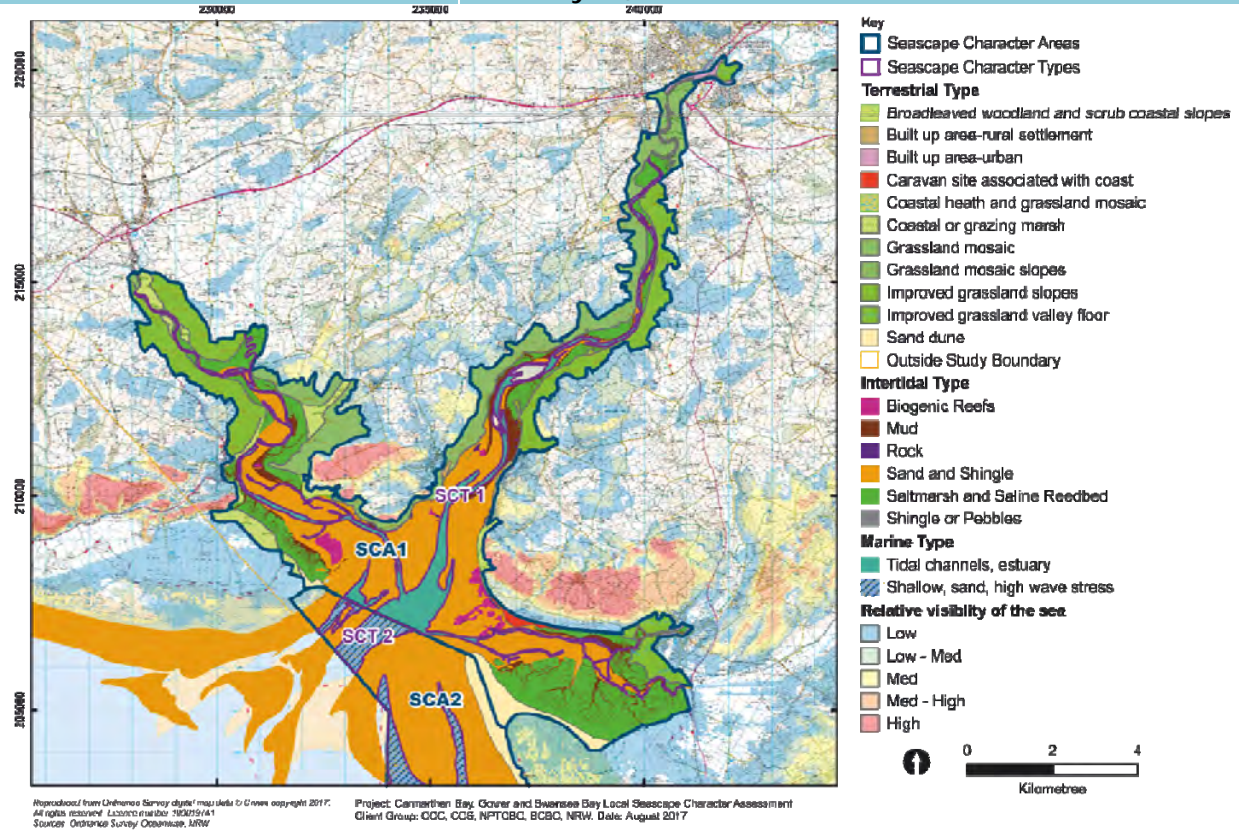
Figure 19 : Seascape Character Areas

5 Seascape Character Areas



5. Seascape Character Area Profiles

Seascape Character Area No:	1
Seascape Character Area Name:	Afon Tywi, Taf and Gwendraeth estuaries



SCA 1: Afon Tywi, Taf and Gwendraeth estuaries



Laugharne- with castle to the left and looking towards Dylan Thomas's boathouse



Tywi estuary at Llansteffan- looking south east towards Ferryside



Gwendraeth estuary west of Kidwelly- looking north west

Summary Description

The SCA, otherwise known as the Three Rivers complex, comprises of the Afon Tywi, Taf and Gwendraeth estuaries and the rivers up to their tidal limits at Carmarthen, St Clears and Kidwelly respectively. The river courses wind their way through a gently undulating Old Red Sandstone landscape to combine in a dramatic estuary seascape with shifting tidal sand banks and bars fringed by saltmarsh to the east and west. This flat, ever changing expanse is contained by sharply rising coastal slopes, some wooded, with dramatic historic features such as Llansteffan Castle and Laugharne Castle commanding views. The former used to be a strategic point controlling the ferry crossing across the Tywi to Ferryside. Culturally, the area has been made famous by Dylan Thomas who was based in Laugharne for the last part of his life. The tidal waters are rich in wildlife, with spawning and nursery beds for fish, migratory fish and cockle beds. They are used by small leisure craft but can be hostile in certain conditions, as evidenced by wrecks in places. There is generally low key leisure use of a few beaches and there is a noticeable caravan park on the Gwendraeth. The MOD use the adjacent dunes and estuary for training, and the mainline railway line fringes the water to the east. Otherwise the area feels relatively tranquil.

Key characteristics

- Three tidal rivers with sinuous courses and muddy banks extending far inland through undulating landscape with no crossings.
- Wide combined estuary of shifting sandbanks and narrow tidal channels with some rocks to the east at Salmon Point Scar, and fringed by salt marshes to east and west.
- Dramatic coastal slopes, some wooded and some grassland mosaic, at Wharley Point and around St Ishmaels containing the estuary with low dunes and levels to the south east and south west.
- The Taf estuary and Afon Tywi are SSSIs and form part of Carmarthen Bay and Estuaries SAC/European Marine Site.
- The rich wildlife including spawning and nursery grounds for fish such as bass and use by migratory fish such as sewin and salmon up the rivers, especially the Tywi. The area forms part of an Important Bird Area holding many over-wintering water birds such as common scoter.
- Strong historic landscape features, in particular Llansteffan Castle and Laugharne Castle, command the coastal waters and evidence of historic trade exists at Kidwelly Quay, downstream of Kidwelly Castle. Fish weirs and traps are historic features within the estuaries.
- Culturally, the area has been made famous by the poetry of Dylan Thomas who was based in Laugharne in the latter part of his life.
- The tidal waters are potentially hazardous with the current use mainly for a limited number of small to medium-sized leisure craft served by small scale moorings.
- There is cockle and mussel picking in the estuary, and fishing for salmon and other species upstream, sometimes by the highly distinctive coracle.
- Limited coastal leisure uses are one linear caravan park, light use of beaches and beach related uses.
- The Wales Coast Path forms an important route around the edge of the water, with many commanding views.
- The coastal slopes and most of the water edge are unspoilt with very limited development.

- The area has a strong sense of place and is generally tranquil with limited access.
- Long and varied and unspoilt views are possible, some as far as the Gower peninsula.

Natural influences

The mouth of the Tywi, Taf and Gwendraeth tidal estuaries/rias cuts into the head of south-facing Carmarthen Bay. The estuary channel is flanked by extensive and shifting tidal sand bars/banks which extend out into the bay to the east (SCA2 - Cefn Sidan Sands) and west (Pembrokeshire SCA41 - Laugharne Sands). Tywyn Point and Ginst Point mark the barrier sand spits at the estuary mouth (in which wrecks are embedded).

The Taf and Tywi estuaries cut down into east west striking and south-dipping Devonian Old Red Sandstone with a Quaternary till cover preserved in the valleys. The Gwendraeth valley is hosted by somewhat softer, Lower to Upper Carboniferous rocks dominated by limestones, mudstones, and sandstones, with glacial till cover. Narrow tidal channels cut through wide intertidal sandflats, flanked by extensive areas of saltmarsh particularly in the Gwendraeth and Taf valleys. In the Gwendraeth estuary, Salmon Point Scar, Pastoun Scar and St Ishmael's Scar are areas of rocky boulders and mussel banks. The estuaries slope gently (<1°) out into the bay, and are macrotidal (tidal range <8m), with strong exposure to waves (currents > 2 knots). The prevailing wind and waves are from the south west.

The estuaries are sediment sinks. Sediment transport in tidal streams down the rivers varies seasonally and estuarine transport continues out into the bay. Sediment is carried into the estuaries from offshore and longshore from the bounding sand barriers and beaches, and is deposited on the shifting spits and sand banks in the estuary or in the saltmarshes. Onshore winds contribute to dunes to the south east (Pembrey Burrows) and west (Laugharne Burrows). Sediment moves in suspension and through traction.

To the north, the rivers cut down through a grassed and wooded Old Red Sandstone plateau at around 100-130mAOD, with stretches of resistant red sandstone cliffs, such as at Llansteffan, and sandy beaches. A cover of Quaternary glacial till is preserved in valleys. The hard bedrock constrains the width of the sandy river valleys.

The Taf estuary and Afon Tywi are SSSIs and form part of Carmarthen Bay and Estuaries SAC/European Marine Site. The three estuaries form part of an Important Bird Area holding 33,000 wintering water birds on a regular basis such as common scoter. Shad and lamprey spawn in the three estuaries and use them as a nursery ground, along with bass. Salmon, sewin, lamprey and shad migrate up the River Tywi.

The large tidal range exposes sediments of sand and mud which support bivalves eg cockles and other species in large numbers. The estuary foreshore is predominantly littoral sand and muddy sand. The sand varies and is fine in places. Biogenic reefs consisting of blue mussel beds on littoral mixed substrata lie at St Ishmaels Scar, Salmon Point Scar, Pastoun Scar and in the Taf estuary. At St Ishmaels Point there are acorn barnacle and sea snail spp. on exposed to moderately exposed eulittoral boulders and cobbles. Where the shore is subject to stronger currents or erosion there tends to be an edge of high energy littoral rock with mussel and/or barnacle communities such as around Wharley Point or barren littoral shingle such as south of Ferrybridge. Where there is deposition there tends to be coastal salt marshes with samphire (*Salicornia* spp) on their fringes and saline reedbeds. These fringe the estuaries especially in the Gwendraeth and Taf.

Grazing marsh lie on the levels. Inland, the hill and valley slopes are mainly improved grassland with woodland in places.



Birdwatching is a pastime in the Gwendraeth estuary.



Walking along the foreshore of the tree fringed Tywi estuary at low tide.

Cultural influences

These three tortuous and shifting estuaries are each tidal as far as a borough town with a castle - St Clears on the Taf, Kidwelly on the Gwendraeth, and Carmarthen on the Tywi. Carmarthen's urban roots are older, dating to the Roman period, as *Moridunum*, the tribal capital of the Demetae and a military base. During the medieval period Carmarthen was one of the most important towns and ports in Wales, if not the most important. Laugharne, on the west bank of the Taf and at the east end of the Landsker line, was also a castled borough town. At Llansteffan, the castle is built atop an Iron Age hillfort. To the east, at St Ishmael, a deserted medieval village lies on the foreshore and under the adjoining coastal edge.

The SCA lies within the Taf and Tywi estuary and Tywi valley Landscape of Outstanding Historic Interest.

Near Llansteffan is believed to be the wreck of a pirate prize referred to in the State Papers of Elizabeth I, of about 30tons, carrying salt and iron. The Kidwelly channels have caused the grounding and loss of several vessels - the *Dublin* in 1789 and the *Two Brothers* in 1953. Other wrecks in this area here include Italian (*Toni*, lost 1899) and French vessels (*Jeune Marie*, lost 1854; *Bois Rouge*, lost 1862) as well as several aircraft.

The west coast paleolandscapes survey identified this area as once being relatively high ground with high potential for surviving deposits. It recommended that every attempt is made to preserve deposits in situ. A submerged forest in peat beds is located in the Gwendraeth estuary off St Ishmaels at Salmon Point Scar. This is a reminder of lower sea levels in Mesolithic times. There is also evidence of early human occupation of the cliffs and coastal slopes.

There are many historic small anchorages and fords within this area. Historic marine traffic, mainly along the Severn and as far as Ireland, reflects the rich agricultural landscape of the hinterland, though Kidwelly represents the western extremity of the main South Wales coalfield, and was the location of brick- and tin-works. The area was a centre of piracy in the 16th century. More recently, it has adapted to tourism and retail.

The settlements at Llansteffan and Ferryside reflect a former crossing point on the Tywi. These formed important staging posts on the Normans' coastal route from Glamorgan via Kidwelly to Pembroke. The ferry was used by Giraldus Cambrensis in 1188. Llansteffan castle, which faces Ferryside across the estuary, was constructed to control the crossing. This 12th century structure forms a commanding focal point on the headland. Ferryside developed as a fishing village but only grew after the opening of the South Wales Railway in 1852. The gun-house is a reminder of the strategic significance of the crossing.

Laugharne preserves its character as a Medieval borough with its castle. At Kidwelly, the old walled town outside the castle was superseded by a more recent centre, medieval in origin, but characterised by 18th- 19th- and 20th-century buildings. Mariners relied on identifying St Ishmael's church and Wharley Point and Castle Hill to guide them through the channels.

Medieval Kidwelly rivalled Carmarthen as a commercial port, but the silting of the estuary in the 16th century led to its demise, despite the quay and canal built in the 18th century.



Kidwelly Castle etching 1831

Fish-traps and weirs have been identified near the confluence of the three rivers. Along with Laugharne, Ferryside was once at the heart of the cockling industry in Carmarthen Bay. Cockle women from Llansaint could collect about 650 tons of cockles a year, and did so until around 1900. Up river, coracle fishing for salmon and sewin is said to be the oldest industry at Carmarthen.

This area is rich in its cultural associations. The death in battle in 1136 of Gwenllian ferch Gruffudd ap Cynan, wife of Gruffydd ap Rhys, when she led an attack on the Norman fortress of Kidwelly, and was killed fighting outside the town, at a spot still known as Maes Gwenllian. The Dwnn family of Kidwelly were a regionally-important dynasty from whom the poet John Donne descends. The castle appears in *Monty Python and the Holy Grail*.

The Pembrey area to the south of Gwendraeth estuary was part of the historically significant Second World War anti-invasion defences as part of the Carmarthen Stop Line. This is discussed in more detail in SCA 2.

Laugharne is associated with Dylan Thomas, whose house and writing shed, used from 1949 until his death in 1953, are preserved as a shrine. The view of the estuary provided the context and inspiration to the poet. Laugharne is widely thought to have provided the model for Llareggub in *Under Milk Wood* (performed first in 1953) although some say the work was started in New Quay in West Wales and it is claimed this settlement was the original inspiration. He is also associated with the area around the Tywi as well, with Fernhill located near Llangain in the river estuary hinterland.

In the Poem in October (October 1944) thought to be about a walk from Laugharne (or possibly New Quay considering the date) he opens with:

*'It was my thirtieth year in heaven
Woke to my hearing from harbour and neighbour wood
And the mussel pooled and heron priested shore
The morning beckon
With water praying and call of seagull and rook
And the knock of sailing boats on the webbed wall
Myself to set foot
That second
In the still sleeping town and set forth.'*

Richard Hughes, who also lived in Laugharne, based the Welsh scenes of *The Fox in the Attic* on the estuaries. Augustus John, Glyn Jones and Robert Graves were visitors to the town.

The dramatic beauty of the estuary and its romantic castles has been captured by painters for centuries. Some of the most eye-catching are by Turner who elevated landscape and seascape painting to new heights. He is often called 'the painter of light' as the pictures below show.



'Laugharne Castle [Talacharne]', JMW Turner c. 1831



'Llansteffan Castle by Moonlight, JMW Turner

In terms of navigation, the Three Rivers Complex estuary mouth is just over 3 km wide between Ginst Point and Pen Tywyn. The estuary and approaches have limited narrow natural channels through extensive drying sandbanks and a bar located in Carmarthen Bay to the south (SCA2 and Pembrokeshire SCA 41). The tide flows strongly creating a hostile environment during onshore winds. There are few permanent markers, such as the tower on Ginst Point and the nearby danger zone pontoon, and only the most dangerous features are marked in season by buoys. An independent inshore lifeboat operates out of Ferryside to service the Three Rivers complex. Typical problems are groundings of yachts such as at Tywyn Point and people getting stuck in deep mud.

There is commercial hand gathering of cockles and mussels, and shellfish fishing. Mussel seed dredging has also been practised. There are netting restrictions in the estuary to protect salmonids and juvenile bass. However, set beach netting, such as for bass, has also been carried out within the area. Laver seaweed (for laverbread) is collected in places. The River Tywi is known as one of the best rivers in the country for sea trout (sewin), and also for salmon. Whilst these enter the river through the estuary and the tidal reaches, the fishing is carried out in the middle reaches, north of Carmarthen (north of Nantgaredig), still sometimes by coracle.

The south eastern part of the area including the Tywi and Gwendraeth estuaries form part of the Pembrey military practice and exercise area. The mouth of the Taf is part of the Pendine military practice and exercise area. The MOD use restricts access and habitats are managed in line with designations.

Cruiser sailing runs from the Tywi from moorings at Ferryside out into Carmarthen Bay. Ferryside is home to the River Towy Yacht Club with a landing stage & approx. 20 swinging moorings for small to medium-sized craft. A Surf & Windsurf school operates from here. Across the water to the west, there is another yacht club near Llansteffan with slipway, landing stage & boat storage both on the shore & inside a shed. Activities here include dinghy sailing, yacht & motor boat cruising, rowing & canoeing. There are approximately 20 swinging moorings off the club & downriver. A few small boats moor in the constricted tidal channels in the saltmarsh at Laugharne. The Taf is used for rowing from Wharley Point inland. The Tywi and Gwendraeth estuaries are used for wakeboarding and waterskiing. Power lines on the Tywi restrict access for masted boats to the north.

Llansteffan Beach, Bryntowy Beach (Carmarthen Bay Holiday Centre caravan park) and the beach at Ferryside are lightly used. The bathing water quality of the beaches are not known but is likely to be affected by the estuary situation. Power kites are flown around Ferryside. Sea angling is carried out on both sides of the estuary. Wildlife/wildfowl watching is popular along the Tywi and Gwendraeth estuaries. Wildfowl shooting is practised on both the Taff and Gwendraeth estuaries.

The Wales Coast Path enjoys intermittent scenic elevated views of the Taf and Tywi estuaries estuary from wooded slopes to the north and south of Laugharne such as Sir John's Hill, and from the Llansteffan peninsula. The route also passes along the water's edge near highlights such as Laugharne Castle and Dylan Thomas's boathouse and writing shed, as well as Llansteffan Castle and Ferryside to the east. It ventures many miles inland through countryside to the first crossing points in both valleys. To the east the path runs close to Kidwelly Castle then back along the estuary past Kidwelly Quay.

Outside the settlements of Laugharne, Llansteffan, Ferryside and Kidwelly and the coastal caravan park at Carmarthen Bay Holiday Centre, the settlement in the hinterland is rural with farmsteads on the hillsides overlooking the upper tidal stretches of the Tywi and Taf. Carmarthen lies on the upper

tidal reaches of the tidal zone on the Tywi and St Clears on the Taf. The railway line is a strong landscape element running along the eastern side of the Tywi estuary, creating a physical barrier allowing only intermittent access to the water's edge.



The tidal river bridge at Carmarthen



View from St Ishmael's church across the Tywi to Wharley Point

Aesthetic, perceptual and experiential qualities

This SCA changes character from the upper tidal reaches down to the three merging estuaries. In the outer areas, seawards from Laugharne, Llansteffan, Ferryside and Kidwelly, the scale is large and there is a strong sense of the horizontal plane of sea, sand, marsh and mudflats. Steep wooded slopes frame dramatic views out to sea and across the estuaries giving a distinct sense of place. This is enhanced by strong historic features such as the castles at Llansteffan and Laugharne and associated settlements with white rendered houses. The more gently sloping pastoral landscapes provide a balance and foil to these features at the lower ends of the valleys. The levels behind Pendine Sands radically change the relationship between land and sea opening up vistas across Carmarthen Bay and towards Gower.

Higher up the estuaries, the scale and enclosure reduces as the valley sides recede. There are associated marshland levels between enclosing low hills which are steep in places, with a more indented pattern of slopes and small side valleys. Church spires in the settlements and the town hall at Carmarthen are localised reference points.

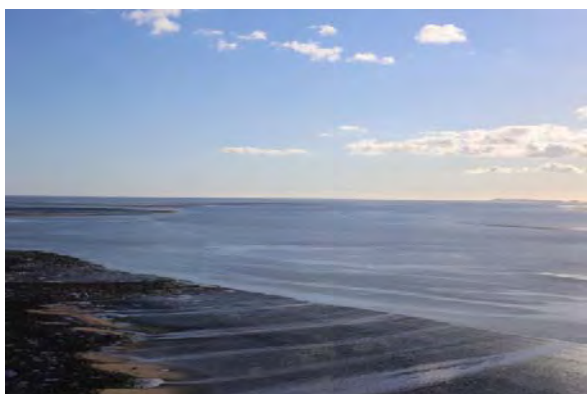
There is a rich textural diversity of marsh, sand with shells (in places, cockle shells are abundant), narrow areas of dunes, and the mature wooded or pastoral hillsides above the valley floor. Dependent on the wind direction the lower estuaries can be exposed, but there is more shelter where protected (especially under east facing slopes such as at Laugharne) and are increasingly sheltered as one progresses upstream.

The character of the water surface changes markedly depending on the state of the tide, wind direction and according to season. In the shallow estuaries at high tide it can be calm due to the shallowness and shelter, with little surf. As the tide ebbs the extensive, sinuous pattern of sands and mudflats becomes exposed. At other times the shallow waters can be significantly disturbed by onshore winds and tides.

Away from the small settlements, the area feels remote and tranquil with a combination of sheltered sea views and the pastoral setting. Few areas feel remote due to the proximity of the villages or towns with associated lighting, and the railway.

The railway and the waterside caravan parks, and wind farm to the west, and the power lines over the Tywi estuary are noticeable but not significant detractors.

Noise from Pembrey race circuit and the MOD practice area to the south disturb the tranquillity at times.



View out across the Tywi estuary towards Caldey Island



View across to Llansteffan Castle from Ferrybridge beach

Cultural benefits and services

The area contributes to natural heritage in the form of the ever-changing estuarial seascape and riverscape, the strong backcloth of wooded and pastoral slopes, and marshes. It contributes towards leisure and recreation services in the form of marine recreation such as sailing and rowing, walking along the Coast Path and beaches. The cultural associations are very strong with the old castles and associated settlements, the association with Dylan Thomas and the continuing use of the river by coracles. In spiritual and religious terms, the area has a sense of remoteness and tranquillity especially in the lower reaches nearing Carmarthen Bay.

Forces for change

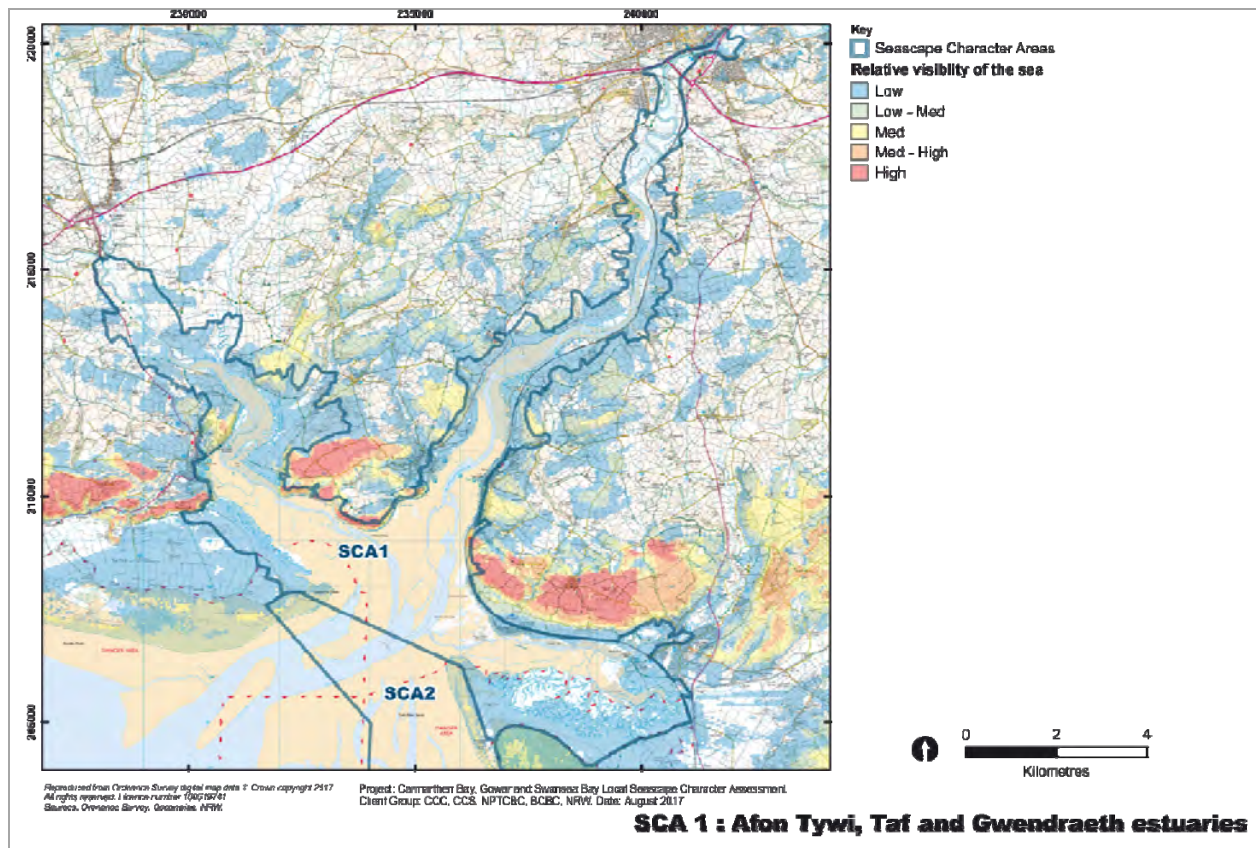
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality	■	■			■	■	■
Views to and from the sea/land	■				■		
Diversity of seascape/landscape	■					■	
Sense of place	■	■			■	■	■
Remoteness, tranquillity and wildness		■			■		■
Distinctive geology /coastal processes	■						
Rich habitats and biodiversity	■					■	
Rich archaeology and built heritage	■						
Strong cultural associations							
Access to the coast or sea	■						■
Valued beaches	■						
Key ■ Existing or potential change that may affect the selected special quality							

Summary

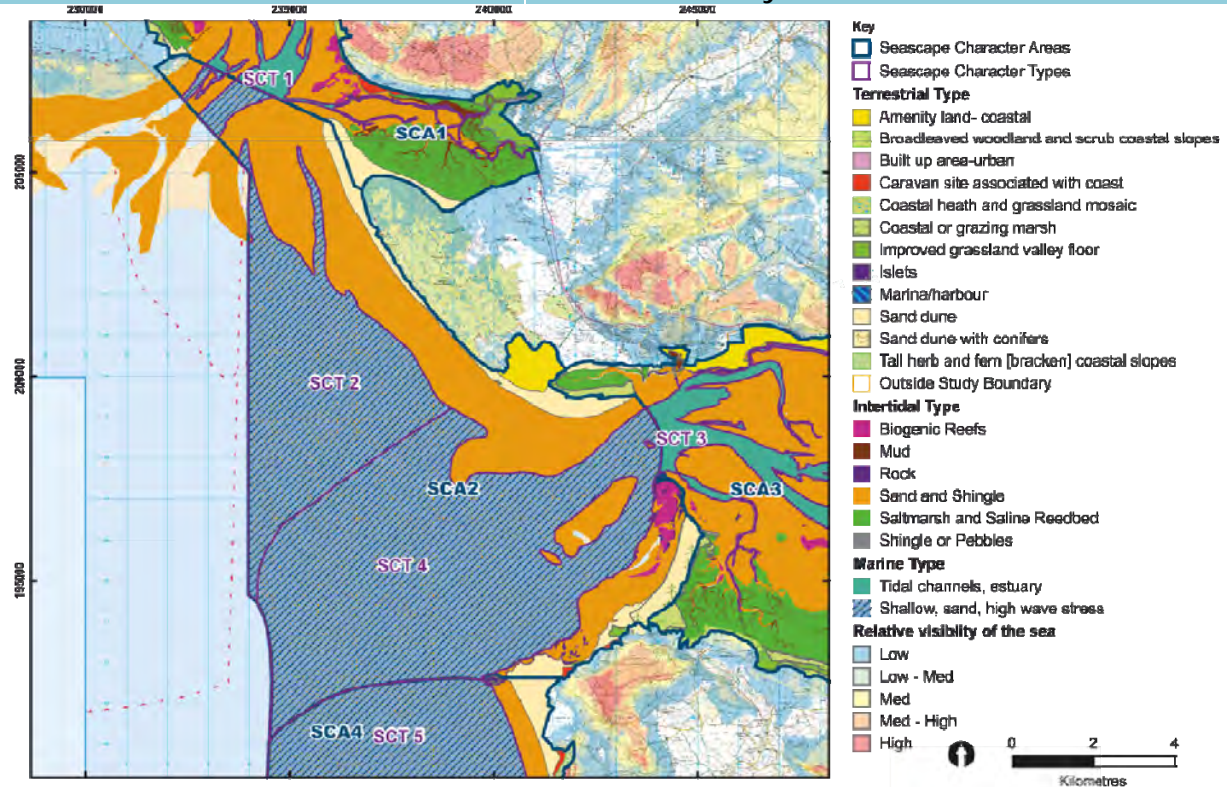
- The natural forces for change are the estuaries which are currently sediment sinks with changing patterns of sand and mud, dunes vulnerable to storm damage and low lying marsh vulnerable to flooding.
- Sea level rise will greatly affect this area, especially the low lying coastal levels to the east and west which may be flooded, and also the flooding arising from the estuary bed rising in line with sea level. The SMP long-term objectives are to enable the natural evolution of the estuaries where the coast is adjacent to agricultural land, semi-natural areas and privately owned leisure complexes. Here it is expected that the existing defences would be deteriorate and fail and natural processes would resume with sea level rise. Managed realignment of the coastline is proposed at Laugharne and to the south west of the Taf estuary. The objective is to hold the line to protect critical infrastructure and larger residential areas such as adjacent to the mainline railway along the Tywi and Gwendraeth to the east, at Llansteffan and just south of St Clears.
- Chalets on hillside east of Laugharne are highly visible and may increase in visibility/impact especially if changed to white cladding or glass fronts.
- Run off and effluent such as from fertilisers/pesticides and food processing continuing to affect water quality.
- Use by the MOD of the sand dunes and outer estuary for aircraft and other training reducing tranquillity.
- MOD restricted access and management assists in flood defences and biodiversity. Any changes in the future may lead to negative changes in respect of biodiversity.
- Potential intensification or expansion of leisure facilities such as caravan parks could be visually intrusive and reduce tranquillity.
- Mussel and cockle harvesting putting pressure on the resource.
- Motor-based sea uses reducing tranquillity.

Key sensitivities

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>Remote, unspoilt estuary with virtually no vertical or man-made features.</p> <p>Unspoilt steep-sided wooded and pastoral valley sides and promontories.</p> <p>Nature conservation interest including migratory fish and shellfish beds.</p> <p>Key focii of castles and other historical and cultural features eg Dylan Thomas's boathouse.</p> <p>Key views from settlements, beaches, castles, focal points, coast path and railway.</p> <p>Open and spoilt views down and across the estuary and towards Gower.</p> <p>Low key recreational uses and facilities such as for sailing and rowing.</p>	<p>Presence of established caravan sites on the Gwendraeth estuary and east of Laugharne.</p>



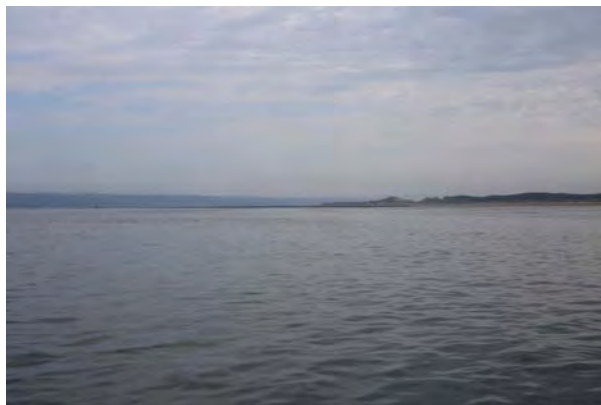
Seascape Character Area No:	2
Seascape Character Area Name:	Carmarthen Bay- East



SCA 2: Carmarthen Bay- East



The convex beach of Cefn Sidan viewed from the Pembrey Burrows looking west along the coast of Carmarthen Bay



Whiteford Point and Burrows from the approaches to Burry Inlet



Broughton Bay at low tide showing one of two caravan parks

Summary Description

The SCA forms the north eastern part of Carmarthen Bay where the estuaries of the Loughor and Three Rivers Complex enter the bay. The shallow waters are populated with large drying sandbanks with intervening narrow shifting tidal channels making navigation hazardous and limited to small boats. There are two major beaches. Cefn Sidan to the north is backed by narrow dunes and coniferous forest at Pembrey, partly used as a country park. Broughton Bay/Whiteford Sands to the south east is backed by dunes and conifers towards the mouth of the Loughor estuary and by low limestone cliffs and agricultural land and caravan parks to the south. This has important submerged forest and peat beds. There is significant nature conservation interest in the area including large populations of wading and over wintering birds, dunes and the intertidal zone is harvested for cockles and mussels. The open beaches are exposed to the prevailing winds and there are panoramic views across Carmarthen Bay to and from Gower and its coastal hills.

Key characteristics

- Gently shelving shallow eastern edge of Carmarthen Bay with two major estuaries adjacent depositing sand and sediment into waters forming shifting sandbanks and channels.
- Large exposed convex beach at Cefn Sidan backed by narrow dunes and coniferous forest.
- Gently concave beach at Whiteford Sands backed by dunes and rectilinear coniferous plantations.
- Beach framed by rocky limestone headlands at Broughton Bay and an agricultural hinterland.
- In Broughton Bay and Whiteford Sands, the intertidal zone preserves an important submerged forest and peat beds.
- Variety of important marine and coastal habitats forming part of Carmarthen Bay and Estuaries SAC, Carmarthen Bay SPA, Carmarthen Bay Important Bird Area, Burry Inlet RAMSAR site and SPA; Pembrey Coast, Whiteford Bay and Pendine Burrows SSSIs and Whiteford Burrows National Nature Reserve.
- Biodiversity interest includes important numbers of waders, overwintering birds and dune systems.
- The treacherous nature of the shifting sands and shallow seas have caused many wrecks over time mainly wooden sailing vessels from the 19th century. The distinctive disused Victorian Whiteford Lighthouse is a reminder of the area's historical use for trade.
- Pembrey has remnants of a World War 1 munitions factory and World War 2 infrastructure.
- The Pembrey Coast forms part of the Taf and Tywi estuary Landscape of Outstanding Historic Interest. The coast and hinterland to the south east form part of Gower Landscape of Historic Interest.
- The coast of Gower is covered by both a Heritage Coast and an AONB designation, and Gower Landscape of Outstanding Historic Interest.
- The tidal waters are potentially hazardous and are currently mainly used by a few small leisure/fishing craft from Burry Port or Tenby/Saundersfoot.
- There is hand gathering of cockles and mussels, and mussel seed dredging.
- The beaches at Pembrey and Broughton Bay with its caravan parks are moderately popular, the former for a range of activities as well as swimming including windsurfing.
- In the less accessible parts of these exposed large beaches, there is tranquillity, with some wildlife watching.

- The majority of the Pembrey coast is simple, very large scale and unspoilt by structures which are discreetly located in the adjoining dunes and forest, apart from the RAF control tower.
- The Gower peninsula coast is largely undeveloped with development confined to clusters in and around Broughton Bay.
- Long and varied views are possible across Carmarthen Bay towards Caldey Island, to and from Gower, with Llanmadoc Hill and Rhossili Down particularly prominent.
- Whiteford Lighthouse is a key landmark out in the middle of the inlet.
- The area is generally very tranquil with wild and remote areas such as Cefn Sidan and Whiteford sands. However, the natural sounds of the sea are overlaid by the occasional military aircraft and by users of the Pembrey racing circuit.

Natural influences

To the north, the mouth of the Three Rivers tidal estuaries (SCA1) cuts into the head of Carmarthen Bay. The estuary channel is flanked by extensive and shifting tidal sand bars/banks.

From Cefn Sidan Sands to Burry Holms the sea bedrock and onshore geology crosses a synformal fold in the east-west striking succession, exposing Upper Carboniferous Coal Measures mudstones and sandstones in its core and then progressively older rocks southwards, passing through the Carboniferous Limestone into Old Red Sandstone. Glacial till covers the bedrock.

Offshore, the sandy sea bed tilts gently south westwards out into Carmarthen Bay (<1°), entirely in shallow sea depths <20 m. Tidal currents are set around the curve of the coastline. The long coastline of Cefn Sidan Sands in front of dunes is exposed to strong winds and waves, and the tidal range of up to >10 m means that the tides go out a long way. Winds are predominantly from the west to south west, with some cross currents along the beach. Tidal streams set north east and south west, with rates up to 1.5 knots in the north east flood stream.

There is net deposition of sand sediment along the 7km long Cefn Sidan Sands, carried in by traction and in suspension from offshore, outwards through dune erosion, and with further transport along the sand bars to both ends. There is erosion on the Whiteford Point side of the bay.

The intertidal area from Cefn Sidan Sands to Pembrey Sands is wide marine sand beaches backed by dunes, with limited diversity due to their stability, and Pembrey Forest. Across the mouth of the Burry Inlet (SCA3) there are extensive sand bars incised by tidal channels. The Whiteford Point to Burry Holms coast is also sandy beaches (Whiteford Sands) backed by extensive dune fields (Whiteford Burrows, Broughton Burrows). Combined with Pendine, these form the largest spit and sand dune system in West Wales. Tors formed by Carboniferous Limestone form low cliffs and caves in the dunes from Hills Tor to Burry Holms. Offshore, along strike, this resistant rock unit forms shallows through Outer Bar to Hall Rock.

The bay's natural character is influenced by the major estuaries which enter it which provide a variety of habitats. Carmarthen Bay is an SPA and forms part of Carmarthen Bay and Estuaries SAC/European Marine Site. The eastern edge forms part of the Burry Inlet RAMSAR site and SPA. Carmarthen Bay is an Important Bird Area holding around 33,000 over-wintering water birds on a regular basis, in particular, the common scoter. This bird dives to the sea floor in the shallow waters to feed on molluscs and other animals. Cefn Sidan Sands provides a relatively undisturbed moult site for the bird. There are also nationally important numbers of oystercatchers and sanderlings.

The Bristol Channel Approaches possible SAC for Harbour Porpoise extends from Carmarthen Bay to the west and then south. Research has shown that hotspots for this smallest UK marine mammal include headlands such as Burry Holms to the south, but it also habituates the shallow bay. Pods of dolphins are apparent occasionally in the bay.

Pembrey Coast, Whiteford Bay and Pendine Burrows are SSSIs. Whiteford Burrows is a National Nature Reserve. The sand-dune systems are of outstanding importance for their rare coastal plants. Pembrey Burrows are one of the few dune systems in Wales which are actively growing.

The intertidal habitats at Cefn Sidan and Carmarthen Bar Sands are littoral fine sand with polychaete worms. The littoral mobile sand of the Carmarthen Bar features the speckled sea louse *Eurydice pulchra*. The infralittoral sand bar in the middle of the Burry inlet approaches hosts various worm and crustacean species.

On the north coast of Gower reaching to Whiteford Point there is a mix of shallow sublittoral slightly muddy fine sand (with the heart urchin *Echinocardium cordatum* and razor shells *Ensis* spp.) and blue mussel beds on littoral mixed substrata- biogenic reefs.

Broughton Bay has sand-scoured mid or lower eulittoral rock intermixed with fine sand and muddy sand. Blue mussel beds on littoral mixed substrata lie to the south west and shingle lies at the back of beach. To the south there are sand-scoured mid or lower eulittoral rock and mussel and/or barnacle communities. Sponges, bryozoans and ascidians occur on deeply overhanging lower shore bedrock or caves. The black tar lichen *Verrucaria maura* is found on the very exposed to very sheltered upper littoral fringe rock around the top of wave platforms.

The hinterland is coniferous plantations or amenity grassland mosaic on Pembrey and the pastoral grassland of Gower to the south.



Cefn Sidan beach with lifeguard markers



Behind the beach in Pembrey Country Park sheltered by conifer plantations

Cultural influences

This area crosses the mouth of the Three Rivers estuary which is discussed in more detail in SCA1. It also crosses the mouth of the Burry Inlet/Loughor estuary, a complex of shifting sandbanks and three navigation channels where vessels would await the tide inside the sand bar to proceed either upriver or set out for longer voyages.

The area's particular hazards historically include the treacherous 7-mile long Cefn Sidan Sands and the Hall Rock, just to the west of Burry Holms. Of the many wrecks identified in this area, most are wooden sailing vessels from the 19th century. It is possible that *La Jeune Emma*, a wooden brig wrecked in 1828 from Martinique to le Havre, carrying the niece of Josephine, Empress of France and former wife of Napoleon I, lies within this area. Part of the wreck of the *Teviotdale* is visible at low water. This was an iron hulled barque built by A Stephens & Sons, Glasgow in 1882 lost carrying a cargo of coal from Cardiff to Bombay on 15 October 1886. An un-named wreck lies high up on the beach at Cefn Sidan and can be seen 1.5 hours after high water. Its stern post and a large amount of timbers are visible. The timbers are very fragile. The windjammer *SV Paul*, launched at Seattle in 1919, is believed to have sunk here, but the wreck has shifted position and now lies in the Gwendraeth estuary (SCA1). A Hawker Hurricane was lost in 1941 at an unidentified location within this area.

The west coast paleolandscapes survey identified this area as once being relatively high ground with high potential for surviving deposits. It recommended that every attempt is made to preserve deposits in situ.

An exposure of intertidal peat was reported at Cefn Sidan in the early 20th century in association with footprints and deer bones, indicating a human presence in the Mesolithic period. In Broughton Bay and Whiteford Sands, the intertidal zone preserves a submerged forest of tree stumps, exposures of peat and clay and red-deer bones and aurochs as well as a medieval fish weir and a 17th century sword.

The area has yielded evidence of the Palaeolithic era, in the form of material in a cave at Three Chimneys on the Gower peninsula coast.

Whiteford Point lighthouse off the north western point of Gower is the one remaining large wave-swept cast-iron Victorian tower in Britain, and was the focal point of the navigation systems. It is occasionally lit in summer by local boating interests. The buoyage systems have changed overtime with the meanderings of the channels.

Early railways brought coal to Pembrey Harbour. In the Pembrey hinterland, a large munitions factory was developed in the First World War on the site of a previous dynamite factory, serving the need for materials such as TNT, cordite and propellant, as well as filling shells. This extended over a very wide area-760 acres, and linked into the nearby GWR mainline railway. From 1940 to 1945 the area was again used for military purposes, including Pembrey airfield and a smaller Royal Ordnance factory, which functioned until 1965. There are archaeologically and historically significant Second World War anti-invasion defences. The area was densely defended and constituted an integral part of the Carmarthen Stop Line. The remains of the munitions factories, of the airfield including Maycrete and Nissen huts, brick buildings, an astrodome trainer and VR hangars, now used by farmers, survive within Pembrey Forest. Pill boxes and anti-tank blocks litter the fields. The airfield perimeter track is used in part as a track for motor sports. The Country Park contains modern leisure features such as a sky slope and golf course.

Local tradition speaks of Pembrey as a home of wreckers, *gwyr y beilli bach*, 'men of the little hatchets' after a locally-made tool, a hatchet incorporating a claw for ripping open cargo and equally useful for dispatching unwanted witnesses to the wreckers' activities. From 2010 to 2013, Pembrey was home to the student music festival, Beach Break Live. Cefn Sidan Sands are a popular naturist attraction.

The Pembrey Coast forms part of the Taf and Tywi estuary Landscape of Outstanding Historic Interest. The coast of the Gower peninsula is covered by both a Heritage Coast and an Area of Outstanding Natural Beauty (AONB) designation. The Gower peninsula was the first AONB to be designated in the UK in 1956 for its classic limestone coast and the variety of its natural habitats. The area is also part of Gower Landscape of Outstanding Historic Interest.

In terms of navigation, the Three Rivers estuary approaches have limited narrow natural channels through extensive drying sandbanks such as Cefn Sidan Sands and the Carmarthen Bar. The tide flows strongly creating a hostile environment during onshore winds. There are few permanent markers, such as the tower on Ginst Point and Laugharne Burrows and only the most dangerous features are marked in season by buoys. There are four yellow danger zone marks from Cefn Sidan Sands south as far as west of Burry Holms, to indicate the MOD firing practice area. Pembrey Sands is unmarked.

The approaches to Burry Inlet are a wide shallow estuary with shifting drying sand banks such as Hooper Sands and Lynch Sands. There are three named channels - north, south and middle. Only the latter is navigable but is not marked or buoyed. This accesses the marina at Burry Port in the Loughor Estuary. The disused Whiteford lighthouse to the south east remains a noticeable feature. The tides flow strongly into the inlet and estuary and the mouth of the estuary is a difficult environment in westerlies/south westerlies as heavy seas can break across the entrance.

There is commercial hand gathering of cockles and mussels and occasionally razor clams and periwinkles. Mussel seed dredging is carried out in the Burry Inlet around Whiteford Point. There are netting restrictions in the Burry Inlet to protect salmonids and juvenile bass. Set beach nets, such as for bass, have also been used within the area and beach seining across the sands and estuary has been recorded. Light Otter Trawling for flat fish species such as plaice and rays is practised further from shore, as is potting for whelks. Commercial and recreational rod and line fishing are prevalent throughout. Species include bass in particular with tope in the summer and rays, conger, whiting (and dogfish) in winter. Beach seining is carried out for sand eels on exposed beaches. Laver seaweed (for laverbread) is collected in places.

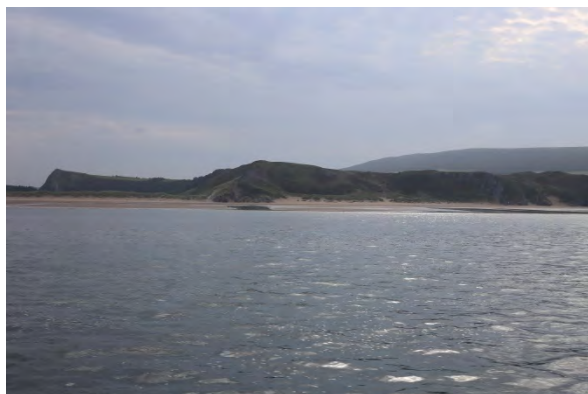
The northern part of the area forms part of the Pembrey military practice and exercise area operated for the MOD. This is used for air to ground bombing and strafing, ground firing, Cadet training and tactical landing exercises. The Pembrey racing circuit is occasionally in operation. Pleasure flights fly from Pembrey airport very occasionally and fly over the Gower peninsula.

Cruiser sailing runs from the Tywi and Loughor out into Carmarthen Bay. Sea angling is carried out both around the mouth of the Loughor and also along the Pembrey and north Gower coast. Pembrey Sands is a moderately well used beach for swimming, sunbathing with surfing and body boarding to the south. Sea kayak & sea angling take place in zoned areas of the beach. The beach has also been used for sand yachting but this is suspended. RNLI have a seasonal presence on the beach. The inshore area of Burry Inlet to the south east is occasionally used for windsurfing and kite surfing and kite boarding is carried out just off the main beach.

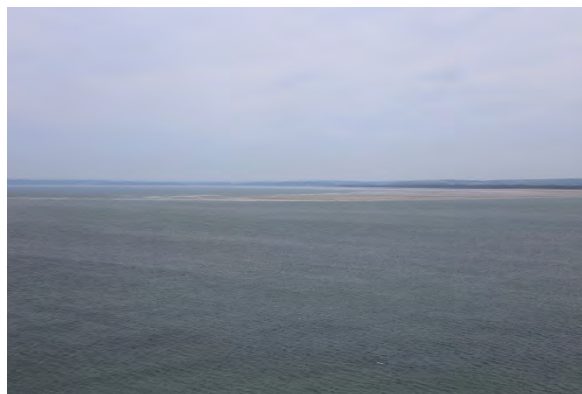
Wildlife watching is found on the less used beaches such as the northern and eastern parts of Pembrey and Whiteford Sands. The National Trust own and manage Whiteford NNR. Quad biking has also been recorded in the sands around Whiteford Bay. Broughton Sands is lightly used.

The Wales Coast Path avoids the coast to the north due to the MOD area, running instead through Pembrey Forest. However, there is a choice of routes around Whiteford Burrows, with one reaching the tip of Whiteford Point to provide a very exposed panoramic vista at the mouth of the Loughor estuary- the closest terrestrial point to the disused lighthouse. The path then hugs the coastal edge with scenic views across Broughton Bay and Carmarthen Bay towards the Carmarthenshire and Pembrokeshire Coasts, normally in a bracing south westerly breeze.

There is little settlement in or adjacent to this character area. There is a caravan park close to the beach at Broughton Farm and St Madoc Christian Youth Club behind the enclosing hills on Broughton Bay. To the north there are the scattered buildings within the Pembrey Country Park. Llanmadoc, a traditional village, and the nearby hamlet of Cwm Ivy, are key visitor gateways to Whiteford Sands and the coast path.



View of Whiteford Burrows from the sea with Llanmadoc Hill as backcloth beyond



View of the sandbanks exposed at low tide on the approaches to Burry Inlet from Twlc Point above Broughton Bay

Aesthetic, perceptual and experiential qualities

The broad sweep of shallow sea with sand banks, channels, breakers and broad beaches is the key feature of this character area which has a large scale and windswept openness. Either side of Burry Inlet the two coasts vary. To the south east, the gently concave beach and hilly backcloth at Broughton Bay give some sense of enclosure, focussing views out into the bay. Whiteford Sands is relatively straight and feels more open and exposed, backed by low dunes. To the north west, the convex beach and level hinterland of forested reclaimed dunes at Pembrey feels more exposed still and it is difficult to appreciate the length of the beach as it gently curves away.

The prominent, heath-covered Llanmadoc Hill creates a visual backdrop and reference point on Broughton Bay, and the rocky headlands such as Cwm Ivy and Hills Tor punctuate and compartmentalise the beach areas along this coast. There are more distant views of the low hills across the Carmarthen Bay towards Laugharne, Tenby and Caldey and the distinctive Whiteford lighthouse is a focal point from many locations in this area and the Loughor Estuary. From the shoreline at Pembrey there are no nearby visual foci, and whilst the beach feels very open, the Country Park hinterland behind has a contained feeling due to the compartmentalisation with bunds and extensive mature coniferous/pine woodland.

There is a unity to this SCA in its expansive and horizontal nature as part of Carmarthen Bay, with shallow water with sand bars evident at low tide indicated by breaking waves offshore. Colours are

muted but there are reflections off wet sand and open horizons.

The sandy beaches are extensive at low tide, leaving a few pools and wetter depressions, but there is a sandy edge associated with the dunes even at high tide. The textures on the beach are varied too, with wet and dry sand and stony patches, and the distinctive twisted shapes of the submerged forest.

Whilst the beaches at Broughton Bay and Whiteford Sands are used by dog walkers and families, mainly from the nearby caravan parks, it is much less busy than the main southern Gower beaches, and particularly at low tide has a relatively tranquil feeling. The beach at Pembrey is well used by those visiting the Country Park but to the west, the area becomes less used for leisure, and more tranquil and more remote. However, the tranquillity is significantly reduced during MOD training operations and utilitarian structures. An old RAF control tower and gun emplacements remain on the edge of Cefn Sidan Sands.

Caravan parks are visible detractors on Broughton Bay, and the blocks of conifer plantation at the back of Whiteford Sands also detract from the sense of naturalness, due to their rectilinear block form, which are widely apparent including from the Loughor Estuary (SCA3).

Whiteford Lighthouse is a key landmark out in the middle of the Burry Inlet.

The area is generally very tranquil with wild and remote areas such as Cefn Sidan and Whiteford sands. However, the natural sounds of the sea are overlaid by the occasional military aircraft and by users of the Pembrey racing circuit.



Broughton Bay wide angle from the south

Cultural benefits and services

The area contributes towards leisure and recreation services in the form of marine recreation such as sailing from Burry Port, walking along the Coast Path and swimming and other sports on the beaches on the north and south west coasts. It contributes to natural heritage in the form of the SAC, SPA and SSSIs, the ever-changing seascape at the estuary mouths, the strong backcloth of wooded and pastoral slopes to the south, and burrows. In spiritual and religious terms, the area has a sense of remoteness and tranquillity especially along Cefn Sidan and around Whiteford Point.

Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key							
Existing or potential change that may affect the selected special quality							
Summary							
<ul style="list-style-type: none"> The natural forces for change are the outer edges of the adjoining estuaries which are currently sediment sinks with changing patterns of sand, beach sands which are a dynamic environment for net sediment deposition and transport, with both onshore and longshore movement, and dunes vulnerable to storm damage. Sea level rise and increased risk of extreme weather will greatly affect this area due to the potential for breaching flood defences/dunes and flooding the flat landscape of Pembrey. There is a risk of further erosion/exposure of the submerged forest and peat beds. The SMP long-term objectives are to manage the realignment of the coast over time. The small localised defence structures (detached rock breakwaters) at Cefn Sidan/Pembrey are likely to be outflanked by the continued retreat of the dunes and so should be removed. The SMP recommends that adaption/resilience measures are developed to manage the risk of coastal erosion and flooding at RAF Pembrey Sands. The MOD has carried out rock protection around the control tower and currently manages the coastal defences around its site in order to protect its assets. Use by the MOD of the sand dunes and outer estuary for training reduces tranquillity. MOD restricted access and management assists in encouraging biodiversity. Any changes in 							

the future may lead to negative changes in respect of biodiversity.

- There are major plans to develop Burry Port harbour & hinterland to complement the Millennium Coast Path from Llanelli.
- Potential expansion of leisure facilities such as caravan parks which can be visually intrusive and reduce tranquillity.
- Motor-based sea uses reducing tranquillity.

Key sensitivities

Factors contributing to sensitivity

The nature conservation value of the SAC, SPA, National Nature Reserve and SSSIs.

The heritage value of the submerged forests, peat beds, wrecks and Whiteford lighthouse

The remote, open, exposed, unspoilt, tranquil sandy beaches, sand bars and burrows eg west Cefn Sidan and Whiteford.

The isolated focal point of Whiteford lighthouse.

Unspoilt views across to Gower from the north coast and across Carmarthen Bay to Caldey Island.

Predominantly unlit, dark coast and sea.

Users of the Wales Coast Path and visitors to the National Nature Reserve and Pembrey Country Park are sensitive receptors.

Factors detracting from sensitivity

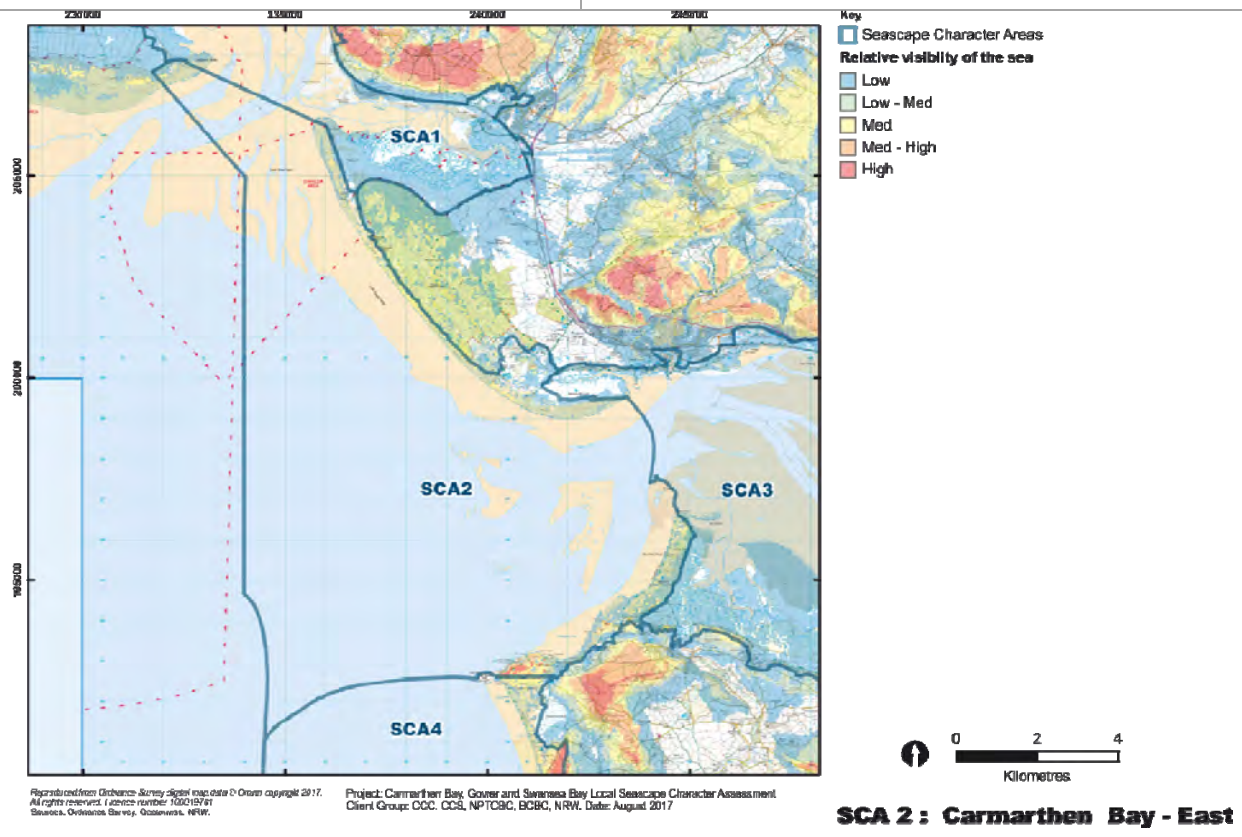
Simple, flat coast at Pembrey.

Large scale views from Pembrey.

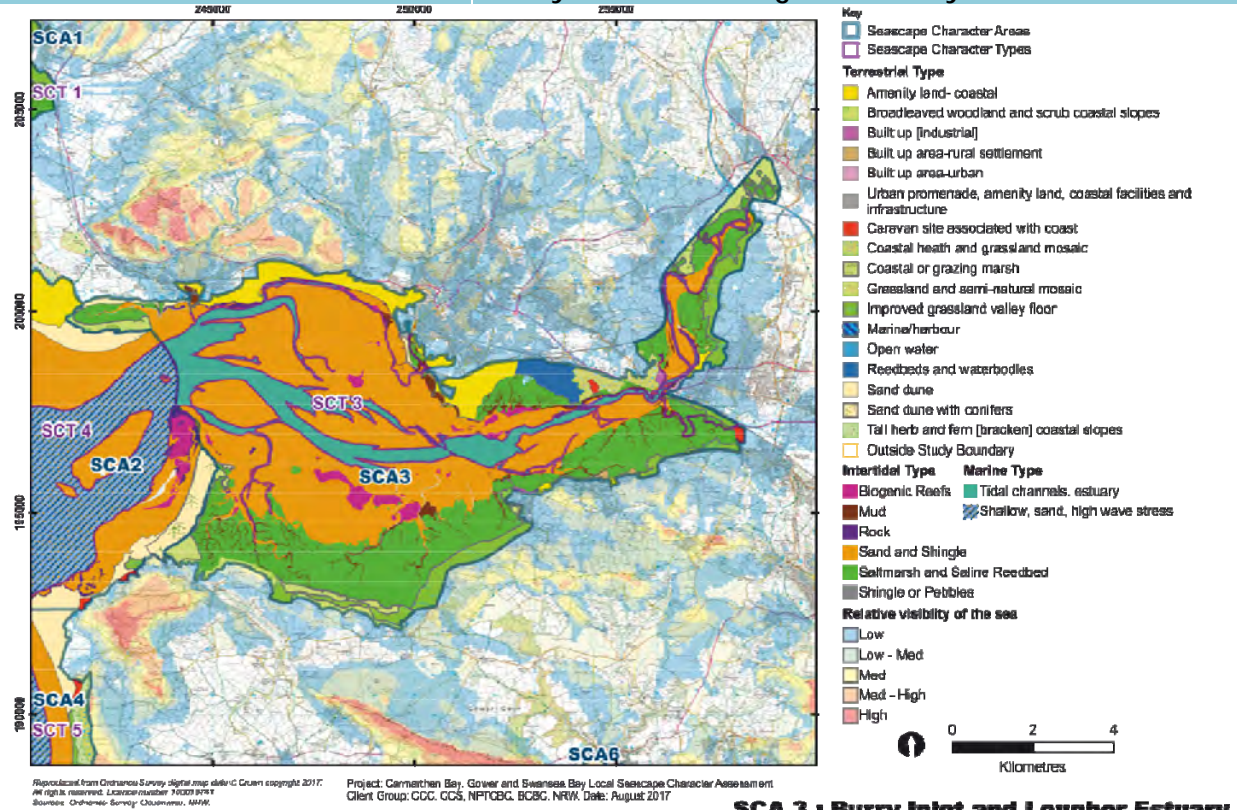
Busy country park and beach at Pembrey.

The noise and movement of RAF Pembrey aircraft and structures.

The noise from Pembrey Race Circuit.



Seascape Character Area No:	3
Seascape Character Area Name:	Burry Inlet and Loughor Estuary



SCA 3 : Burry Inlet and Loughor Estuary



Looking north across the Burry Inlet from Dalton's Point towards Llanelli at low tide- the view changes significantly at high tide.



The beach at Burry Port looking towards Gower and Worms Head.



The more enclosed Loughor estuary looking towards the Loughor Bridge.

Summary Description

The Loughor Estuary runs from Pontarddulais to the coast widening into the Burry Inlet and then Carmarthen Bay. It is large and open with a relatively narrow tidal channel and large areas of sand banks and mudflats which are covered at high tide. There is a contrast between the north and south coasts. The north is urban, dominated by industry, new housing and leisure development and the Millennium Coastal Park. The larger buildings are apparent in long views from the south. The south is predominantly rural and tranquil and has the most extensive grazed salt marsh in Wales, backed by steep, partly wooded slopes. The south is part of Gower AONB and Heritage Coast. The tidal waters are rich in wildlife, particularly wildfowl, and is known for cockle and mussel beds. Small leisure craft and commercial boats use Burry Port but use is limited by tides and the silting of the dredged channel. Culturally, the most famous event is Amelia Earhart landing here in 1928 on the first solo female flight across the Atlantic.

Key characteristics

- The Burry Inlet and Loughor Estuary is a large sandy tidal estuary/ria defined by faults in the bedrock which run north-south in the upper reaches and east-west as the river becomes the Burry Inlet and meets Carmarthen Bay.
- The restless tidal waters with a large tidal range, sandbanks and mudflats act as strong unifying features which constantly change the perception of the area.
- The estuary provides a plethora of habitats with important feeding grounds and resting areas for birds. Designations include Burry Inlet RAMSAR site and SPA, Carmarthen Bay SPA and Carmarthen Bay and Estuaries SAC. These overlay SSSI designations.
- The northern stretch of tidal river winds along a flat valley floor in a landscape of rural undulating character.
- The northern coast of the estuary is flat with an engineered edge, industry and urban settlements. Llanelli with its harbour and docks was associated with the export of coal and steel and was named 'Tinopolis'.
- Industry has faded and much of the north coast is reclaimed land with the Millennium Coastal Park allowing access to the coast, the Llanelli Wildlife Centre, new housing and mainline railway which acts as coastal flood defence.
- The southern coast is rural with very limited coastal settlement and access apart from Penclawdd and Crofty and is defined by the most extensive unbroken salt marshes in Wales.
- Hills rise behind the flat estuary sides to the north around Burry Port and to the south directly behind the marshes, creating a strong, distinctive edge. This is relatively unspoilt to the south.
- Navigation is difficult in the area with the tidal channels and access is limited to a few hours around high tide.
- There is still hand gathering of cockles in many patches in the estuary to the north and south, processed in Penclawdd.
- Burry Port harbour is still in use, now as a large marina accessed by a dredged channel which is prone to silting up. Leisure and small commercial fishing vessels use the harbour.
- The grazed salt marshes to the south are highly distinctive, atmospheric and tranquil, backed by the sharp and distinctive partially wooded steep slopes of the north Gower.
- There is a strong sense of openness and an emphasis on the horizontal/flat plane and marshes with virtually no structures interrupting the expansive sweep of the estuary.
- There is a sense of wildness and remoteness on the southern coast, separated from the

urban areas around Llanelli to the north.

- There are wide long views up and down the estuary, with the sunlight most often on the north coast and the Gower peninsula hills in silhouette or shadow.
- Whiteford Lighthouse is a key landmark out in the middle of the inlet (just in SCA2).
- The southern coast as far as Crofty is part of Gower AONB and Heritage Coast.

Natural influences

The Loughor Estuary is an east-west sandy tidal estuary/ria bounded to the west by Burry Point and Whiteford Point. It has a large tidal range of up to 8m. Meandering tidal channels incise into the fine sands, flanked by wide sand bars, mudflats, and low-lying saltmarsh (Llanrhidian Marsh) along the southern coast and upper estuary. The ria/river valley is cut into an east-west striking Carboniferous bedrock succession in the southern limb of a synform, with Upper Carboniferous Coal Measures in the core of the fold, passing southwards into older rocks of the Namurian Millstone Grit and the Carboniferous Limestone to the south. North-south faults offset the bedrock, and the river channel turns north in the upper estuary along a fault line. The bedrock is widely covered by glacial till. The north coast from Burry Port to Llanelli comprises made ground. Whiteford Point is a large sand spit, and sand and shingle extends north to Whiteford Lighthouse. On the north coast, sandy beaches have areas covered with boulders at Burry Port and Machynys. Patches of boulders spread south out on the mud and sand flats out from Penrhyn Gwyn (Careg Fach and Carreg Ddu) to the north. Areas of grass-covered, low lying saltmarsh drain into the estuary from the south.

The river valley is an area of net sediment deposition. Sand sediment is transported by tidal streams and currents into the estuary by traction and in suspension by longshore transport around from Pembrey and Whiteford Sands, with sand spits advancing into the estuary significantly in historic times. Sediment is also carried in from offshore. In the valley to the north, estuarine currents carry sediment downstream and outwards onto the sand and mudflats.

The Burry Inlet/Loughor estuary provides a plethora of habitats with important feeding grounds and resting areas for birds. Below the Loughor Bridge the area forms part of the Burry Inlet RAMSAR site and SPA. Loughor Estuary is part of the Carmarthen Bay SPA and forms part of Carmarthen Bay and Estuaries SAC/European Marine Site. Burry Inlet and the Loughor Estuary, Pembrey Coast and Whiteford Bay are SSSIs.

The river channel supports shad and lamprey and otters use the channel to feed. The area is an important nursery for bass. The large tidal range exposes sediments of sand and mud which support bivalves, eg cockles, and other species in large numbers. The edges feature areas of dwarf seagrass (*Zostera nolte*).

Virtually the whole area is in the Burry Inlet Important Bird Area supporting internationally important numbers of over-wintering wildfowl and waders such as oystercatcher, shoveler, pintail and knot as well as other species. These feed on the large intertidal areas and saltmarsh.

The intertidal habitats at Whiteford Point comprise of blue mussel beds on littoral mixed substrata-biogenic reefs intermixed with fine and muddy sands.

The intertidal Burry Inlet is mainly littoral muddy sand and fine sand, interspersed with biogenic reefs to the south. The littoral muddy sand hosts a range of species dominated by molluscs (eg common cockle and Baltic tellin), polychaete worms (eg lugworm) and crustaceans. Polychaete worms and Thin Tellin/Clam are found in the littoral fine sand. Some Blue mussel beds are found on the littoral mixed substrata. In the littoral muddy sand around Llanelli dock, along the northern edge towards Loughor, and the west side of Loughor, there are various worm and mollusc species. In the middle of the Burry Inlet, bivalves dominate the muddy sand channel shores towards Loughor.

The area includes sand-dune systems which are of outstanding importance for their rare coastal plants and dune slack communities, such as fen orchid and dune gentian. It also includes the most extensive continuous area of saltmarsh in Wales. The transitional low salt marsh habitats include marsh samphire. The breach of the sea wall at Cwm Ivy has led to the salt water inundation of freshwater marsh. Upstream, the valley floor and sides are saline reedbed, coastal grazing marsh or improved grassland.



Sheep on the salt grazing marsh interspersed with intricate muddy tidal channels.



Waders feeding on the mudflats at Penclawdd animate the view.

Cultural influences

The estuary is thought once to have been fordable, and is still navigable at high tide by smaller vessels; Llangennech Quay was the limit of navigation in the 19th century, though the tidal limit was further upstream, around Hendy. Fishing took place in the pills.

Wrecks found in the area include *Adventure*, *ECT*, *William and Mary* and *Harmony*.

The west coast paleolandscapes survey identified this area as once being relatively high ground with high potential for surviving deposits. It recommended that every attempt is made to preserve deposits in situ.

The river was guarded by the Roman fort of *Leucarum* (Loughor) and subsequently by a castle built in the 12th and 13th centuries within the eastern angle of the Roman military enclosure. The borough of Loughor is attested in 1319. The estuary is thought once to have been fordable. Loughor is mentioned in the Welsh port books of the 16th century, but Burry Port and Llanelli to the west became the major regional entrepôts as the local coal trade developed in the 19th century.

Cockling has gone on from at least the Medieval period, gathered from the estuary flats between tides by local women whose men-folk worked in the local collieries. Cockle-gatherers from the Penclawdd fishery numbered around 500 in 1885.



Cockle picker, Geoff Charles, (1961)



Amelia Earhart's plane after landing in Burry Port, 1928

Until the 20th century, the northern mouth of the estuary was marked by small collieries, smelting houses, their railway systems, jetties and staithes, as well as by clay-pits and brick and tin-works. Second World War tank traps are distinctive features in this area.

Llanelli developed as a mining town and then as a steel and tinsplate producer. It was the centre of

the Welsh tinsplate industry in the latter half of the 19th century, when it became known as 'Tinopolis'. However, coal was being shipped from Llanelli from before the sixteenth century. Initially Llanelli had a tidal harbour. Pemberton Dock was the first tidal dock from around 1794, swiftly followed by Carmarthenshire Dock on the River Lliedi for coal and iron in 1799 and Copperworks Dock in 1804. Subsequently a number of docks were built, including 'New' or Great Western Dock in 1834 and a modified North Dock in 1896. New Dock was opened to take advantage of the demand for coal mined at Llangennech which was especially prized for marine vessels, and North Dock attracted anthracite traffic. Most of the docks are now closed and infilled with only Carmarthenshire and North Dock surviving. Most have been regenerated or modified by modern development. The extended harbour breakwater, extended south and protected by slag breakwaters remains.

Burry Port exported coal from the Gwendraeth valley. Much of the harbour, designed by Sir Joseph Banks and built in 1832, remains. Traces of post-Medieval docks and wharves are evident at Loughor.

On the southern side of the estuary, there are Iron Age Hill forts (eg Cilifor Top), mediaeval castles (eg Weobley) and churches in the hinterland. Collieries and early copperworks at Penclawdd made use of a canal, a small dock, an anchorage/mud berth for vessels, and a little jetty above it. Limestone was quarried at Landimore, exporting through Bennett Pill. In World War II there was a military firing range on the saltmarsh.

Gower Landscape of Outstanding Historic Interest and Taf and Tywi Estuaries Landscape of Outstanding Historic Interest overlap the area.

In terms of famous people, Amelia Earhart, was the first woman to fly across the Atlantic Ocean and landed her plane 'Friendship' at the end of this historic trip in the waters off Burry Port in 1928. Karl Jenkins was born in Penclawdd. He is the most performed living composer in the world today.

The town of Loughor is particularly associated with the religious revival of 1904, sometimes portrayed as a working-class reaction to the increasingly middle-class nature of Welsh nonconformity. Llanelli remains a strongly Welsh-speaking town. The new waterside suburb in the town has aroused controversy.

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In terms of navigation, the Middle Channel is the prime unmarked channel between the shifting drying sand banks of Middle Sands, Llanrhidian Sands and Cefn Padrig Sands. The tides flow strongly and the mouth of the estuary is a difficult environment in westerlies/south westerlies as heavy seas can break across the entrance. Whiteford Pool is used as an anchorage in quiet weather. The final approach channel to the marina at Burry Port is buoyed and the low white lighthouse with its red roof is apparent. It is greatly affected by the silting up and needs regular dredging. The marina has a sill gate which maintains water levels and has 450 berths plus some capacity for visitors. Private and commercial fishing boats operate out of the marina as well as sailing and motor yachts. There is a slipway and yacht club.

The RNLi station at Burry Port was the third busiest station in Wales in 2015 with a total of 57 launches during the year. This is due to the numerous hazards of the area including the sandbanks at Pembrey Old Harbour and off Llanelli beach and Machynys, the rocky outcrop at Whiteford lighthouse and the causeway around Burry Holms in SCA2.

Up the Burry Inlet the channel is tortuous with limited use. The old docks at Llanelli, 5km further along the north coast, are disused and no longer accessible by boat. There is still a tower at the entrance and markers just offshore. An old, breached training wall to the south of the docks in the middle of the estuary is marked by an orange buoy where it meets the natural channel, and still diverts tide and fish.

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There is commercial gathering of cockles in many patches in the Burry Inlet to the north and south, and processing in Penclawdd. It is one of the few places in the UK where hand gathering takes place using a rake and riddle, transported by donkey carts. Mussels and periwinkles are gathered closer to the coast, with mussels managed to avoid affecting the cockle beds. Mussel seed dredging is carried out around Whiteford Point. There are netting restrictions in the Burry Inlet to protect salmonids and juvenile bass. However, set beach nets, such as for bass, have also been used. Laver seaweed (for laverbread) is collected in places. Marsh samphire is collected in the saltmarsh. Saltmarsh lamb

is a distinctive product of the area.

Cruiser sailing runs from the marina at Burry Port mainly out into Carmarthen Bay. The area between Burry Port and the Machynys peninsula is occasionally used for windsurfing and kite surfing. The area north of the Loughor bridge is used for wake boarding. There is a medium sized yacht club just above the bridge which offers boat storage although, again, navigation is challenging in this area. Sailing, motor cruising & sea kayaking occurs here, as well as sea angling from the beaches

The beach at Burry Port is very lightly used for various activities including sea angling. It is also used to launch jet skis. Beaches at by the North Dock, Llanelli and at Machynys are also very lightly used. Wildlife watching is carried out on both sides of the estuary but with a particular focus to the south in the salt marshes. Wildfowl shooting is also carried out to the south.

Much of the northern coastline has been reclaimed from former industrial uses and comprises the Millennium Coastal Park. There are promenades along much of its length with a large golf course adjacent. The path is popular for walkers, cyclists and wildlife appreciation at the Llanelli Wetlands Centre. There is a golf course and a golf driving range which adds to the recreational mix. There is also a 'Water Park' as well as a small dock used for sail training and canoeing. A riverside park at Loughor enjoys views across a quieter, narrow stretch of water in a semi-rural context.

The Wales Coast Path hugs the northern shore of the estuary as far as possible, passing through Burry Port and the Millennium Coastal Park, running parallel to the mainline railway in parts. Views are focussed on the Gower peninsula and the hills such as Cefn Bryn and Llanrhidian Hill. It is forced inland to Gowerton but then runs along the southern edge of the saltmarshes and low lying coastal pasture hard against the steep northern coastal slopes of the Gower peninsula. Wide views across to Llanelli and Burry Port across the atmospheric levels are possible with grazing sheep, other livestock and occasional wildfowl animating the view.

The Millennium Coastal Path cycleway forms a section of both the Celtic Trail cycle route (part of NCR 47) and the National Cycle Network NCR 4. The mainline railway acts as coastal flood defence.

The southern coast as far as Crofty is part of Gower AONB and Heritage Coast.

This SCA is associated with the urban areas to the north of Llanelli, Burry Port, Loughor and Pontarddulais, as well as a ribbon of settlement on the north coast of the Gower peninsula around Pen-clawdd. Some industrial development lies on land behind the coastal strip around Llanelli, such as the Trostre steel works. The A484 cuts across the river at Loughor, effectively dividing the estuary into a broader eastern area connected with the open sea, and a more inland and riverine stretch from Loughor Bridge to Pontarddulais. The latter stretch is crossed by the M4.

Aesthetic, perceptual and experiential qualities

In the western part of the estuary, the character is open, expansive and predominantly horizontal and is clearly connected to the open Carmarthen Bay. It is framed by the low hills of the Gower peninsula and those behind Burry Port and Pwll. As one progresses east and northwards the scale reduces, with more enclosure towards the peri-urban higher reaches.

There are several focal points, of a diverse nature. These include the coniferous plantation blocks behind Whiteford Sands, the nearby Whiteford lighthouse, the Trostre steelworks, new housing at North Dock and Machynys Quay, and the Loughor bridge. At a local scale, Weobley Castle is prominent on the hills close to Llandridian. There are focal points along the Llanelli Coastal Path such as the sculpted mounds in the coastal park, the café at North Dock, and the Wetlands Centre. The causeway through the marshes from Wernffrwd is a distinctive low key feature essentially only apparent from some key higher viewpoints in this area, such as Weobley Castle.

Low hills contain the character area. On the Gower peninsula, these include steep slopes with mature woodland or a pastoral mosaic, whilst on the north side the hills are characterised by urban development on the lower slopes, such as at Burry Port, and a patchwork of woods, pasture and arable land above.

Whilst the area is unified by the broad, expansive nature of the estuary, with its restless tidal waters or glistening mud banks, the north and south coasts and upper reaches have a distinct

texture and sense of place. The extensive salt marshes and muddy flats with steep slopes define the southern, Gower side. The more diverse and complex pattern of urban and industrial development with modern parkland define the northern side. The latter are relatively busy and lit at night, contrasting with the darkness of much of the Gower peninsula coast, except around Pen-clawdd. The salt marshes are highly distinctive, tranquil and atmospheric, backed by steep slopes. The estuary above the Loughor bridge quickly becomes rural, quietly winding through gentle agricultural valley sides before reaching the M4 with its noise and movement

Whilst the estuary is exposed to westerly winds, the marshes in particular can feel very sheltered and calm in the lee of the land. The water is similarly open to wave fetch from the west and has strong tidal currents. However, at low tide on a calm day the water appears to be still and mirror-like, with sinuous channels between the flat areas of mud and sand. The salt marshes have intricate patterns of salt water or muddy pools, creeks and channels, with sheep grazing on the fine salt tolerant grass sward in between.

Activity and tranquillity reflects the pattern of land uses on the north and south sides of the estuary, with honeypots of activity including walking, cycling and beach activities along the Millennium Coastal Park, compared to the quiet enjoyment of the much more tranquil marshes.

There are wide long views up and down the estuary, with the sunlight most often on the north coast and the Gower peninsula hills in silhouette or shadow. There are several distinct elements which detract from the quality of the area, including the sights and sounds of industry to the north, the Loughor bridge and pylons, and the effect of urban development which is visible from most viewpoints.

Whiteford Lighthouse is a key landmark out in the middle of the inlet (just in SCA2).

The estuary acts as a large dark area separating Gower from Llanelli. The lights of the town and especially the golf range on the northern shore are noticeable and intrusive at night.



View from Weobley Castle showing the otherwise discreet straight access out to the mudflats across the grazing marsh.



The Loughor Estuary looking north at low tide showing minor moorings

Cultural benefits and services

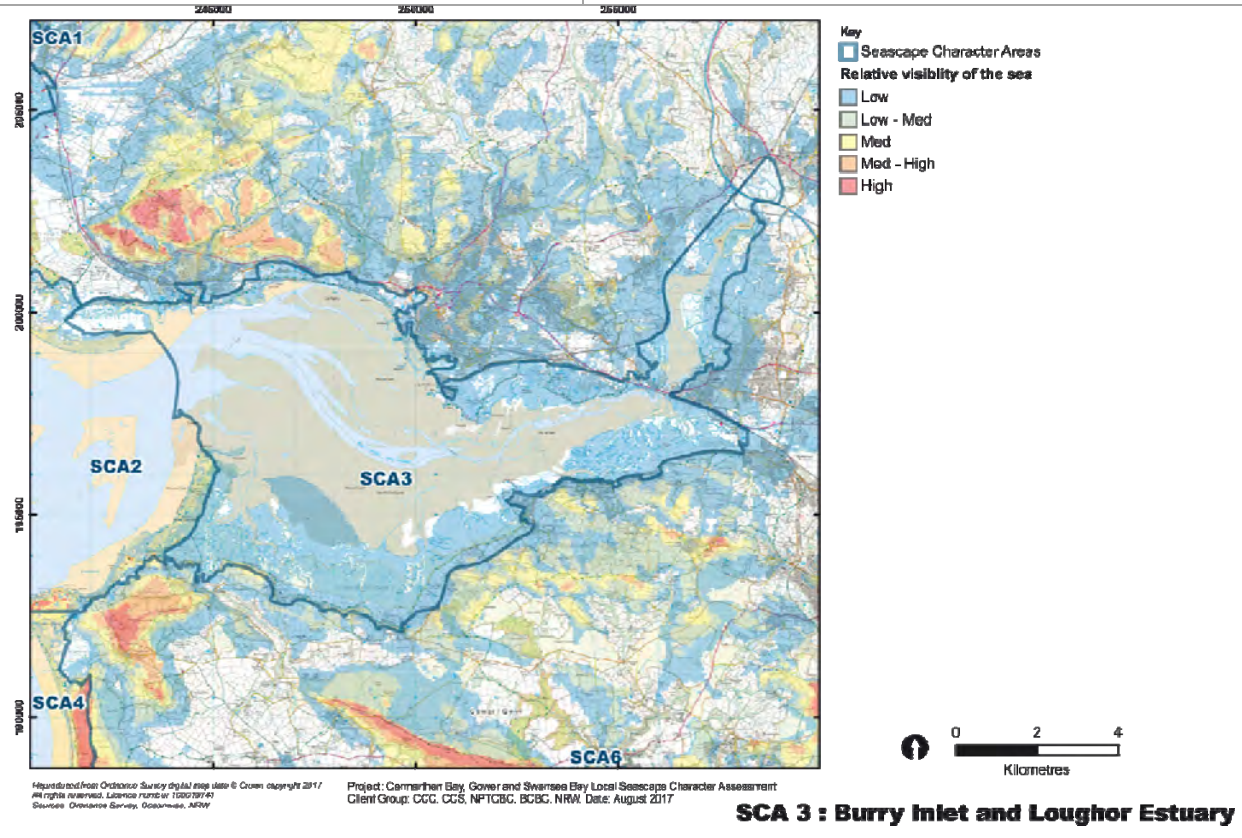
The area contributes towards leisure and recreation services in the form of marine recreation such as sailing from Burry Port and Loughor, walking along the Coast Path and beaches on the north coast. It contributes to natural heritage in the form of the SAC, SPA and SSSI, the ever-changing estuarial seascape and riverscape, the strong backcloth of wooded and pastoral slopes to the south, and marshes. In spiritual and religious terms, the Inlet has a sense of remoteness and tranquillity especially in the salt marshes and towards Whiteford Point.

Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key	Existing or potential change that may affect the selected special quality						
Summary							
<ul style="list-style-type: none"> The natural forces for change are the estuaries which are currently sediment sinks with changing patterns of sand and mud, dunes vulnerable to storm damage and low lying marsh vulnerable to flooding. Sediment movement continues to necessitate the need for dredging keep Burry Port harbour open. Sea level rise will greatly affect the area through flooding especially of the unprotected areas such as the salt marshes. The SMP long-term objectives are to hold the line on the northern coast to protect the large settlements, industrial assets and railway line with some managed realignment just west of the Loughor Bridge. The coast around Crofty and Penclawdd is also recommended for ongoing protection. Elsewhere the objective is to enable the natural evolution of the estuaries where the coast is adjacent to agricultural land and semi-natural areas. Mussel and cockle harvesting may be putting pressure on the resource, but can also support it. Proposals (by NRW) to stabilise the tidal flows in the Burry Inlet will protect the cockle beds. Potential expansion of industry or intensive leisure uses on the north coast could be visually intrusive and reduce tranquillity on Gower coast, as well as adversely affect the dark skies of the inlet. 							

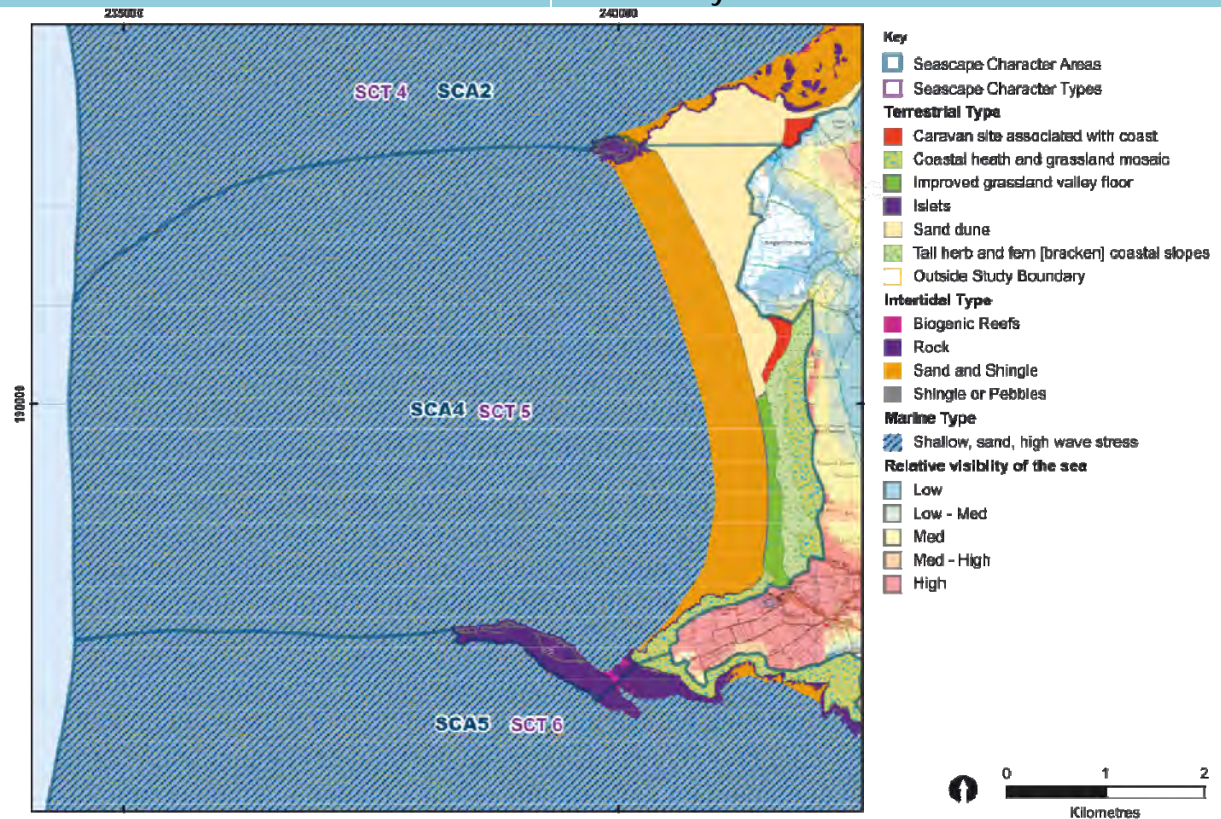
- Motor-based sea uses such as jet skis reduce tranquillity.

Key sensitivities

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The nature conservation value of the SAC, SPA and SSSIs.</p> <p>The heritage value and setting of Weobley Castle and Cilifor Top.</p> <p>The value and setting of the industrial heritage features such as docks around Llanelli and Pen-clawdd.</p> <p>The remote, open, unspoilt and dark estuary and salt marshes.</p> <p>The views along the Burry Inlet and estuary such as from the Wales Coast Path, Dalton Point and the Millenium Coastal Park.</p> <p>Views across to Gower from the north coast.</p> <p>Users of the Wales Coast Path and visitors to heritage features are sensitive receptors.</p>	<p>The modern built form and industry of parts of Llanelli and Burry Port.</p> <p>Noise and movement of traffic on the Loughor bridge.</p> <p>The presence of lighting such as the golf range on the northern coast.</p>



Seascape Character Area No:	4
Seascape Character Area Name:	Rhossili Bay



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SCA 4 : Rhossili Bay



Iconic view along the sweeping unspoilt beach with the backcloth of Rhossili Down, terminating in Burry Holms.



Surf schools with the distinctive profile of Worms Head defining the bay behind



A view from Llangenith Burrows across the bay to Worms Head

Summary Description

The SCA forms the most westerly end of the Gower peninsula and faces the full force of the south westerly prevailing winds. It comprises of a shallow sandy bay with large sweeping beach framed by limestone rock formations to the north and south. The latter terminates in Worm's Head which is a highly distinctive series of precipitous landforms linked by tidal rocks to Rhossili Point. Rhossili Down provides a simple coastal heathland backcloth and is visible from long distances. The headlands have strong currents and the bay can be treacherous in some weather conditions. Small boats use the sea for fishing and cruising and the beach is highly popular for surfing and body boarding. The beach is among the most highly rated in the UK and Rhossili is a popular visitor destination due to the superb views and exhilarating coastal experience.

Key characteristics

- A simple shallow west-facing sandy bay, with a large long beach on the most westerly location of the Gower peninsula.
- The bay is framed by limestone rock formations to the north and south (Worms Head and Burry Holms) and is backed by the sandstone mass of Rhossili Down with its simple skyline which defines the end of the Gower peninsula, and by extensive dunes to the north.
- The semi-natural vegetated backcloth of the Down is simple and unspoilt with only one building at its base.
- The highly distinctive form of Worms Head is linked to Rhossili Head by a jagged tidal wave cut platform. It defines and frames the bay and acts as a focal point for views.
- The beach faces west and is highly exposed to the prevailing south westerlies and as a result often has large waves and surf.
- The area is part of the Carmarthen Bay and Estuaries SAC and Carmarthen Bay SPA, and is an Important Bird Area. The end of Worms Head is an important nesting area for seabirds and grey seals haul out on the promontory. There are porpoises and dolphins around the head and bay.
- The exposed bay with its adjoining rocks and strong currents has several wrecks and the coast and hinterland has evidence of settlement from Paleolithic times onwards.
- The coast and hinterland form part of Gower Landscape of Outstanding Historic Interest.
- Small boats use the area for fishing and cruising round the coast and there is a day anchorage north of Worms Head.
- The wide beach is one of the most popular in the UK and is a particular favourite of surfers and body boarders.
- Rhossili is a popular destination for day trippers and acts as a honey pot to the south on the cliff top with an access out towards Worms Head.
- The National Trust owns and manages significant parts of the area including Worms Head and the carpark at Rhossili.
- The caravan park to the north, though popular with surfers, detracts from the dunes' natural character.
- There are superb unspoilt views along the beach from Rhossili framed by Rhossili Down - often used as an iconic promotional view of Wales, and of Carmarthen Bay and Caldey Island framed by Worms Head.
- The area is part of Gower AONB and Heritage Coast.

Natural influences

From Burry Holms to Worms Head, the sea bedrock geology and onshore geology of Rhossili Bay lies in the east-west Gower anticline. This brings up Old Red Sandstone in the form of Rhossili Down in the central part of the fold, flanked by Carboniferous Limestone (Lower Carboniferous) that bounds the bay in the rocky limestone headlands of Burry Holms to the north and the highly distinctive Worms Head to the south. Glacial till and periglacial sediment cover Gower plateau and fill gullies. The bedrock geology of Devonian and Carboniferous rocks extends offshore westwards into Carmarthen Bay, striking roughly east west, with a cover of Quaternary sediment. Seabed sediment is sand.

Rhossili Bay faces westward and slopes gently (<1°) into Carmarthen Bay. The intertidal area is sandy across the bay, but rocky foreshores and shallow rock platforms flank the limestone headlands. The shallow (<20 m depth) sandy bay is backed by barrier dunes in the north, in front of the sloping ground of former dunes (<50m) in the north and middle part of the bay - Llangennith Burrows, Hillend Burrows. Farther south, low cliffs of glacial till and periglacial sediment, and dunes below Rhossili are replaced to the south by a cobble/pebble beach, and then by limestone cliffs (<30 m) and rocky foreshores across to Worms Head.

The bay is strongly wave-dominated, exposed to the prevailing south westerly currents and waves, with high wave energy and wave swells typically <6 m, currents > 1m/sec and a tidal range >8m. There is a tidal race between Worms Head and the mainland. Sand sediment moves by longshore transport in the north of the bay, and blows inland onto the dunes and burrows. Some sediment transport from cliff erosion produces the cobble and pebble fringing beach in the southern bay. The beach is overall in some sediment deficit.

The sandstone Rhossili Down (<189m) runs north south behind the bay, truncated to the south by a thrust fault against Lower Carboniferous rocks. The rocky tidal peninsula (Shipway) connects the island of Worms Head (<53 m), whose series of distinct rocky landforms drop very steeply into the bay along their northern edge. Exposure to strong winds and waves is evident from the Blow Hole of the Outer Head. Tidal streams are strong on the southern side particularly around Worms Head and Rhossili Point.

The area is part of the Carmarthen Bay and Estuaries SAC and Carmarthen Bay SPA. Rhossili Down and Gower Coast: Rhossili to Port Eynon are SSSIs. The area forms part of Carmarthen Bay is an Important Bird Area holding 33,000 wintering water birds on a regular basis such as common scoter. The Bristol Channel Approaches possible SAC for Harbour Porpoise extends into the bay. Research has shown that hotspots for this smallest UK marine mammal include Worms Head and Burry Holms, but it also habituates the shallow Rhossili Bay. A colony of around 50 grey seals haul out on the north side of Worms Head. Dolphins and jellyfish are occasionally sighted and turtles are very occasional visitors.

The intertidal main beach is littoral fine sand with polychaete worms, molluscs and echinoderms. Sand-hoppers inhabit the upper shore and strand-line and there is a narrow band of littoral shingle at the top of the beach, featuring prickly saltwort (*Salsola kali*) - a species of principal importance in Wales. The wave cut platforms to the south features blue mussel beds on littoral mixed substrata, toothed wrack (*Fucus serratus*) and red seaweeds on moderately exposed lower eulittoral rock, and Fucoids and kelp in deep eulittoral rockpools. The Burry Holms rocks to north also feature channelled wrack (*Pelvetia canaliculata*) and barnacles on moderately exposed littoral fringe rock, spiral wrack (*Fucus spiralis*) on exposed to moderately exposed upper eulittoral rock, and black tar lichen on very exposed to very sheltered upper littoral fringe rock

Rhossili Down hosts a wide range of heathland communities derived from the underlying red sandstone. Gorse with bracken dominates the westerly slopes.



Surfers crossing the beach from Llangenith Burrows with Hillend caravan site and Rhossili Down in the background



Worms Head from a boat in the bay

Cultural influences

This west-facing bay has been used historically by vessels making their way into Burry Inlet, either waiting for pilots or the tide, but which has also proved treacherous in some wind and sea states, particularly south-westerly gales.

The famous 'Dollar Ship' was wrecked in Rhossili Bay in the 17th century. Spanish silver dollars depicting Phillip IV dated to 1625 and 1639 were still being recovered from the wreck in the early 19th century. Other known ship wrecks in the bay include the *City of Bristol* in 1840, *Tocopilla* 1878 *Mary Stenhouse* in 1879, *Verani* in 1894, *Ann of Bridgewater* in 1899, *Notre Dame de Lourdes* in 1910, *Pansy* in 1941, and the *Cleveland* in 1957. Remains of the *Helvetia*, wrecked in 1887 and of *Vennerne*, wrecked in 1894, can still be seen in the bay. The *Helvetia's* remain are much photographed.

The area has yielded evidence of the Palaeolithic era, in the form of a flint hand axe on the edge of the beach having being eroded naturally from the cliff face. This is one of only two stray Palaeolithic axe finds in Wales.

The paleolandscapes study identified this area as once being relatively high ground with high potential for surviving deposits. It recommended that every attempt is made to preserve deposits in situ.

Later periods are represented by several Neolithic burial chambers and Bronze Age cairns on Rhossili Down and by promontory forts on the clifftops. At the foot of the Down, immediately below the modern village, is the site of the deserted medieval village and the former church of Rhossili which became covered in sand in the later medieval period; remains of both now lie amongst sand dunes. The most significant landscape survival, however, is in the hinterland of the SCA- the medieval open field system known as the Vile. Its field pattern is preserved today and defined by uncultivated earthen baulks and drystone walls.

The coastal trade in limestone quarries in Rhossili Bay is well documented- a trade which lasted until 1899. The name 'Lime-kiln point' is a reminder of this industry. A millstone quarry is also recorded here in 1583.

The coast and hinterland form part of Gower Landscape of Historic Outstanding Interest.

There are many local legends associated with seafaring, smuggling and piracy. Folk memory locates the landing of Viking ships in the bay when Llangennith church was attacked in 986AD, suggesting that the people of Rhossili burnt their ships in reprisal. It is said that Rhossili Bay was ideal for smugglers due to its remote location, and that contraband was hidden all over western Gower.

On 19 June 2011, almost four hundred people claimed a world record for the largest number of people skinny-dipping at one time in the sea at Rhossili. It was chosen for its relative seclusion.

The beach is known nationally. It has been voted the best beach in Britain two years in succession and in 2015 was rated third by Trip Advisor, and 11th best in Europe. The view from Rhossili is an iconic view used in the past by the Visit Wales to promote the Principality.

The area has inspired poetry. In the poem 'Of Burry Holm', Don Rogers wrote:
'..open to the wind and the wide sea, faded with the endlessly modulating greys..'

*Southward, the Worm in pulling strongly out to sea,
But held by the tail still stationary.
The jagged curves of surf in Rhossili Bay....'*

The coastal part of the SCA lies within Gower AONB and Gower Heritage Coast.

As mentioned above, in terms of navigation, Rhossili Bay is open and exposed to westerlies and south westerlies and so has to be treated with caution in prevailing winds. There are no navigation features. There is a daytime anchorage known as 'The Kitchen' north of Worms Head which is useful when the wind is from the south or east. This is used by leisure sailors for lunch breaks, swimming or to await appropriate tide conditions in Burry Port.

There is a coastal watch station at Worms Head operated during defined daylight hours by the National Coastwatch Institution and manned by volunteers (NCI website 2016). This is located in the National Trust land and was once a full coastguard station. The station plays a useful role in warning and assisting people who cross the causeway to Worms Head during low tide and get trapped by the incoming tide. The inshore lifeboat at Horton is alerted and assists the stranded people alongside the Rhossili Coastguard Rescue Team.

Set nets, such as for bass, have been used along the beach. Beach seining has also been recorded. Hand gathering of razor clams has been recorded to the south close to Worms Head and hand gathering of periwinkles to the north. Light Otter Trawling for flat fish species such as plaice and rays is practised further from shore, as is potting for whelks. Commercial rod and line is also carried out in places, especially around Worms Head. Recreational rod and line fishing is prevalent throughout. Species include bass and tope in the summer and rays, conger, whiting (and dogfish) in winter.

Cruiser sailing through the area tends to emanate from Burry Port, Tenby or Saundersfoot out into Carmarthen Bay, with most venturing as far as Worms Head. Sea angling is carried out both around Worms Head and along the beach. Wildlife trips around the Gower peninsula often visit the area around Worms Head in the summer season. The bay is occasionally used for windsurfing, kite surfing and kite boarding.

The bathing water quality is excellent. Llangennith at the north of Rhossili beach is exposed giving good surfing & windsurfing conditions & two competing surf schools supports this. It is also heavily used, particularly for body boarding and swimming spread out over a wide area. Kayaking & sea angling are enjoyed and power kites are flown along the beach. Climbing is carried out on the cliffs on southern edge of the bay. There are large car parks which allow access to the beach- at Hillend associated with a caravan park in the dunes, and at Rhossili.

The Wales Coast Path follows the edge of the dunes behind the beach to the north, before heading inland slightly to run south on the lower slopes of Rhossili Down. Views are breathtaking across a wide sweeping bay and beach, both to the west across Carmarthen Bay and south towards Worms Head. From Rhossili and its large car park, the path runs on top of the cliffs towards the head. This section of path is almost level and is accessible and extremely popular. Beyond the tidal causeway of jagged rocks there is a path which runs to the end of Worms Head, even crossing a natural rock bridge called Devil's Bridge. On land or at the water's edge, the overall experience in this exposed bay is exhilarating.

There is no settlement within the SCA itself other than the old rectory at the foot of Rhossili Down (owned by the National Trust), although the traditional villages of Rhossili, adjacent to the area in the south, and Llangennith to the north, are both key gateways for visitors to the coast. The National Trust owns the back of the beach south of Hillend, the Rhossili car park and Worms Head.

The noise of helicopters flying low over the coast reduces tranquillity. Military aircraft using Pembrey across the bay are also apparent occasionally.

Aesthetic, perceptual and experiential qualities

Rhossili Bay has a large, gently concave sandy beach, with a wide, open and exposed feeling, defined by the cliffs and rocky headland of Worms Head to the south and the rocks of Burry Holms to the north. It is backed on its eastern side by the steep hill of Rhossili Down, and extensive hilly dunes to the north.

Worms Head is a prominent headland with a highly distinctive shape, visible from the whole of the character area. A couple of white rendered buildings also stand out, including the old rectory under Rhossili Down and the visitor centre close to the cliff top car park at Rhossili, whilst to the north Burry Holms appears as an island at high tide.

The overall character is unified by the long, monochrome expanse of the beach. There is a tangible brightness of the light reflected by the sea and sand, combined with the noise of the waves rolling in. The beach is exposed to winds from many directions and the fine sand can blow in long drifts.

The sandy beach is several hundred metres wide at low tide, reducing to a narrower strip at high tide. The shallow sands and rolling surf is highly popular for those willing to walk down from Rhossili or through the caravan park and dunes at Hillend, for surfing, body boarding, swimming, windsurfing, dog walking or just relaxing on the beach. Despite these activities, there is a feeling of wildness and exposure and a walk along the beach or on the cliffs to Worms Head can be exhilarating. There is a sense of risk in walking over tidal rocks to reach Worm's Head itself.

The caravan parks around Hillend and the busy honeypot at Rhossili detract from the area's natural character.

There are superb unspoilt views along the beach from Rhossili framed by Rhossili Down - often used as an iconic promotional view of Wales, and of Carmarthen Bay and Caldey Island framed by Worms Head. Views across to Lundy are possible from Rhossili Down on clear days.

The area including the beach, Rhossili Down and Worms Head can be tranquil places, especially in off season. The tranquillity is interrupted by visitors at peak times of year, by numbers of low flying helicopters and occasionally by military aircraft crossing the bay to or from Pembrey.

The area is generally dark but Rhossili and the caravan sites impinge on this on the periphery. Tenby and Saundersfoot are highly visible at night across the bay.



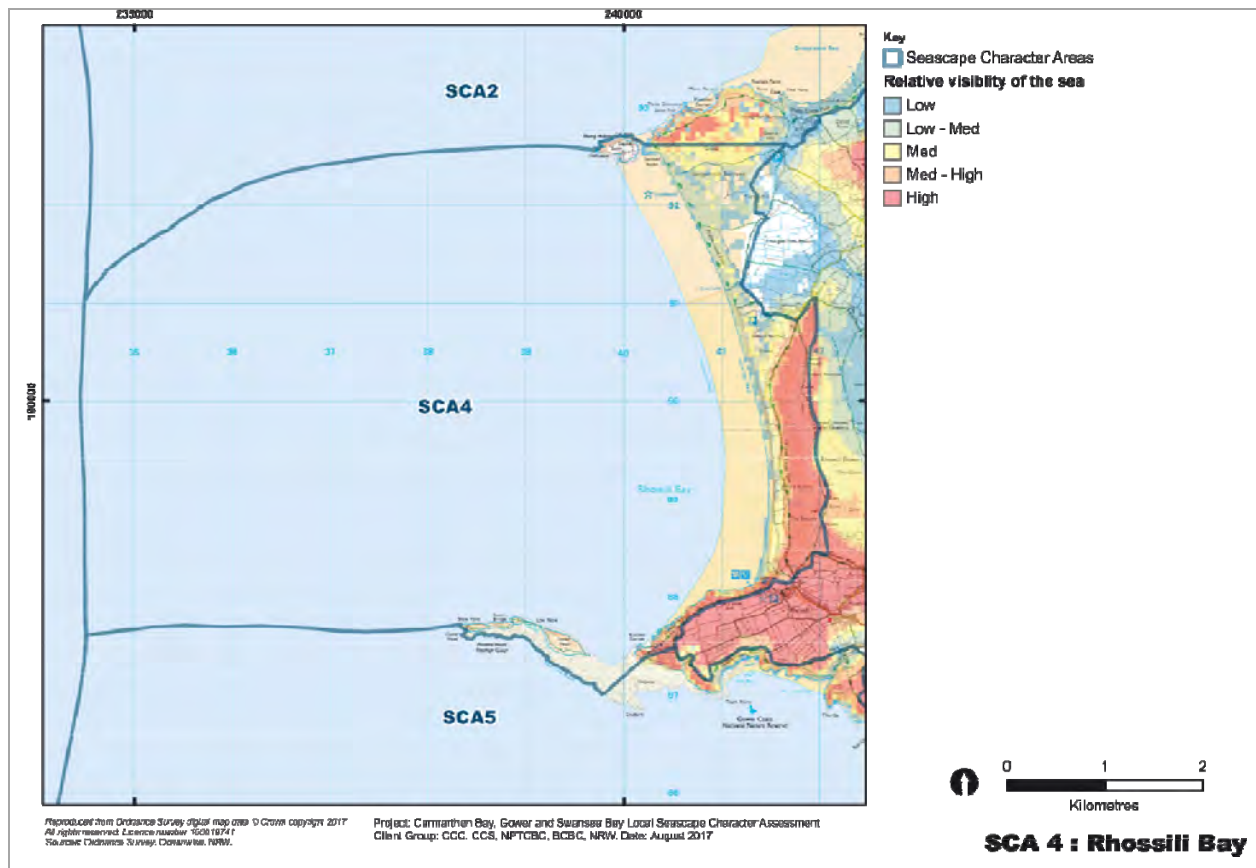
Llangenith Burrows which screen some of the caravans but not all. Rhossili is apparent on the lower skyline.

Cultural benefits and services							
The area contributes towards leisure and recreational services improving health and well-being through the various activities on the beach and along the coast including surfing, swimming, fishing and walking, and to natural heritage in the SCA, SPA and various SSSIs and covering the bay, the cliffs, coastal heath and foreshores and dunes, and in the form of views out to sea and towards Caldey Island and across Carmarthen Bay.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key Existing or potential change that may affect the selected special quality							
Summary							
<ul style="list-style-type: none"> The natural forces for change are changing patterns of sediment movement within the bay, causing overall sediment deficit with dunes and cliffs vulnerable to storm damage, sometimes exposing archaeological features. The SMP long-term objectives are to allow this predominantly undeveloped coastline to continue to develop naturally potentially retreating in some places. For instance, the causeway to Worms Head could become permanently submerged. There is potential for measures to enable the dune complexes to respond naturally. The few socio-economic assets at risk from coastal erosion or flooding are recommended to be relocated in the longer term. Pressure of visitors on Rhossili and Rhossili Head is increasing, which may be exacerbated by the National Trust refurbishment and management of the car park at Rhossili. There is also pressure from visitors to Llangenith Burrows at the other end of the beach where there is a very busy camp site and car park, especially in good weather. 							

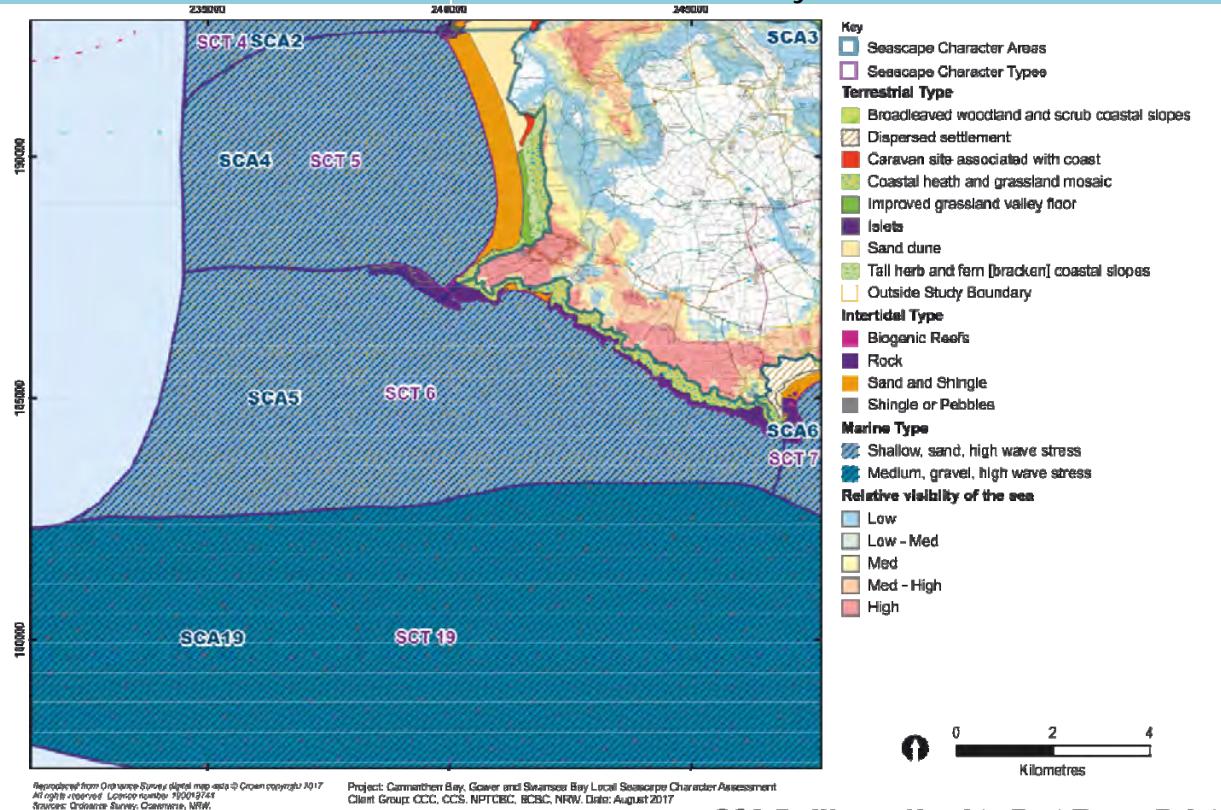
- Potential expansion or intensification of leisure facilities such as caravan parks can be visually intrusive and reduce tranquillity.
- Offshore energy projects may have an effect on the area.
- Previous management measures of fencing at Llangenith Burrows have left dangerous and unsightly broken wire fencing.

Key sensitivities

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The nature conservation value of the SAC, SPA and SSSIs along the coast.</p> <p>The heritage value of the various remains and wrecks.</p> <p>The open, exposed unspoilt character of the area offshore with a sense of wildness and views to Lundy and across Carmarthen Bay, towards Caldey Island.</p> <p>The intrinsic character of the large sandy beach framed by open unspoilt headlands, Rhossili Down and Llangenith Dunes.</p> <p>The distinctive feature of Worms Head and its wave cut platform.</p> <p>Views towards Caldey Island from the beach, clifftop walks and Rhossili Down and also across to Lundy.</p> <p>Users of the Wales Coast Path, visitors to Rhossili and the bay and leisure boaters from Swansea and Burry Port are sensitive receptors.</p>	<p>The modern built form of parts of Rhossili and the busy car park.</p> <p>The presence of caravan sites.</p>



Seascape Character Area No:	5
Seascape Character Area Name:	Worms Head to Port Eynon Point



SCA 5 : Worms Head to Port Eynon Point



View towards Worms Head across the distinctive coastal rock formations including Deborah's Hole.



View from offshore towards the distinctive coastal cliffs and rock formations around Paviland.



View from offshore towards the distinctive and iconic Worms Head with leisure fishermen in the foreground trying to exploit the rich waters.

Summary Description

The SCA is a linear, exposed coast of dramatic limestone cliffs, jagged reefs, incised valleys and small coves terminating in the highly distinctive form of Worms Head to the west. The sandy Helwick Channel is enclosed by the Helwick Sands to the south and narrows to the east. There are caves in the cliffs with Paleolithic remains, such as Goat's Hole Cave, Paviland. As this stretch of coast is not accessible by car it is a quiet, tranquil and remote section of the coast with very limited development. The waters are used by leisure and fishing boats and for wildlife trips.

Key characteristics

- A linear, exposed coast of dramatic limestone cliffs, jagged reefs, incised valleys and small coves terminating in the highly distinctive form of Worms Head, separated from the mainland by a tidal rock platform.
- The sandy Helwick Channel is enclosed by the Helwick Sands to the south and narrows to the east to the Helwick Pass.
- The coast is exposed to high wave energy and there are strong tidal streams around Worms Head and Rhossili Point, and overfalls on the south side of the sand bar.
- The area is part of the Carmarthen Bay and Estuaries SAC and the Carmarthen Bay SPA includes Worms Head with its seabirds. The semi-natural vegetated limestone coast is covered by the Limestone Coast of South West Wales SAC and SSSIs.
- Though protected in part by the Helwick Bank the sea can be treacherous with dangerous reefs and the narrow Helwick Pass and there are wrecks along the coast.
- The coast and hinterland form part of Gower Landscape of Outstanding Historic Interest.
- Of particular note are the caves in the cliffs with Paleolithic remains, such as Goat's Hole Cave at Paviland and Longhole Cave, which were inhabited when sea levels were much lower. Submerged forest lies north of Helwick Bank.
- Small boats use the area for cruising round the coast and just off Worms Head is a popular location for fishing. Wildlife trips ply this section of coast in the summer. Kayaks and surfers also use the coast.
- The coast is difficult to access apart from the far west and far east and is therefore a relatively quiet clifftop section of the Wales Coast Path.
- The small beaches at Fall Bay and Mewslade Bay are used by locals and a few surfers.
- A dramatic linear stretch of angular cliffs and short incised valleys, small rocky coves and caves, and jagged rocky platforms.
- The coast is exhilarating and exposed with dramatic limestone rock formations. This is echoed by the experience at sea with the caves being exposed to view, giving a strong sense of history.
- Overall, the area is largely unspoilt with very limited development, is tranquil and feels remote.
- There are long unspoilt views out to sea with Lundy and Exmoor visible on clear days, and views along the coast, some to Worms Head.
- The area is part of Gower AONB and Heritage Coast.

Natural influences

This south south west facing linear coast with minor indentations from Worms Head to Port Eynon Point slopes shallowly (<1°) into the Bristol Channel and is exposed to the prevailing winds and waves from the south west, Offshore, the resistant Carboniferous Limestone of the coast is overlain successively southwards by bedrock of west north west - east south east striking Upper Carboniferous mudstones and sandstones, then Triassic mudstones with halite and Lower Jurassic mudstones and marls/limestones. The bedrock has a thin Quaternary cover. The sea floor sand sediment coarsens south into gravelly sand in SCA19. The shelf slopes steeply into the deeper (>30m) Helwick channel, which is bounded to the south by the long linear Helwick sand bar (>12 km). This runs from West Helwick through Helwick Swatch to East Helwick, separated from the mainland by Helwick Pass off Port Eynon.

Apart from the sandy bays of Mewslade and Fall Bay, the coastline is rocky, with Lower Carboniferous limestone cliffs and jagged, rocky foreshores e.g. Dagger Reef. The south side of Worms Head slopes more gently than the north side into a wide rock platform. The coast is exposed to high wave energy, with onshore swells and tidal range up to >8m. The strong tidal streams of the Bristol Channel can lead to overfalls on the south side of the Helwick sand bar. Tidal streams are also strong around Worms Head and Rhossili Point.

Sediment transport is predominantly eastwards along this exposed length of coast, with Helwick Sands providing an important part of the sand circulation. Wave abrasion and erosion affect the limestone rocks.

The onshore geology of Carboniferous Limestone, which strikes along the coastline, forms steep, resistant rocky cliffs between 30-61m high falling from Gower plateau. Numerous faults offset the geology and these lines of weakness in the rock correspond with many of the small embayments. The cliffs display raised beaches.

The area is part of Carmarthen Bay and Estuaries SAC and the north western edge lies within the Carmarthen Bay SPA. The whole coastal edge is part of the Limestone Coast of South West Wales SAC. Gower Coast: Rhossili to Port Eynon is an SSSI and the coast is covered by Gower Coast National Nature Reserve and South Gower Nature Reserve.

The Helwick Bank medium fine sands lie within known nursery grounds for turbot, lemon sole, plaice and whiting. Sand eels also spawn here and are an important part of the local marine food web. Harbour Porpoise, the smallest UK marine mammal, is evident all along the Helwick Channel from Worms Head eastwards. Pods of dolphins are apparent occasionally between Worms Head and the Helwick Bank together with large rafts of Manx shearwater and diving gannets.

Key coastal habitats include the intertidal rocks and adjacent cliffs which are rich in invertebrates. The southern rocky coast of Gower features up to seven intertidal biotope zones from the sublittoral to the upper and supra-littoral. Mostly these comprise of moderate and high energy rocks. Yellow and grey lichens are found on supralittoral rock. Black tar lichen grow on very exposed to very sheltered upper littoral fringe rock around top of wave platforms/reefs and cove beaches - the splash zone. Barren littoral shingle is found at the top of cove beaches. Polychaete worms are found in littoral fine sand on the beaches. Acorn barnacle, Common limpet and sea snail spp. are on exposed to moderately exposed or vertical sheltered eulittoral rock. Blue mussel beds lie on littoral mixed substrata. Toothed wrack and red seaweeds are found on moderately exposed lower eulittoral rock, fucoids and kelp in deep eulittoral rockpools in wave platform and along the coast. The red seaweed Irish moss (*Chondrus crispus*) and Barnacle spp. occur on very exposed to moderately exposed lower eulittoral rock along the coast. There is a large zone of Acorn barnacle and oarweed (*Laminaria digitata*) on moderately exposed sub-littoral fringe bedrock all along the coast.

There is exposed maritime grassland such as on Worms Head, and limestone grassland on cliff tops. The incised valleys contain blackthorn and hazel scrub. Worms Head, and to a lesser extent the cliffs to the east, support seabirds such as chough, kittiwake, guillemot, razorbill and occasionally puffin (found more often further to the west).



Wildlife Boat trips ply the coast between Worms Head and Oxwich Bay



The Coastwatch station overlooking Worms Head

Cultural influences

Historically, the Helwick Channel running along the northern side of the sandbanks provided an escape from the heavy seas to be found outside the bank in southerly gales but no protection from the west. Sailors also needed to avoid the rocky shore such as the Dagger Reef which is an underwater shelf extending southwards from the Worms Head/Tears Point.

The shipwrecks in this area indicate the variety of ships passing between Helwick Bank and the land, and the trades they were serving. Examples are the wooden smack *Dasher*, lost in 1852, registered at Dungarvan, the schooner *Glanrivil Miner*, lost in 1872 carrying pitch from Swansea to Barrow in Furness, registered at Hull. The *Milan*, by contrast, was also Hull-registered but was a substantial steamship carrying Egyptian cotton-seed to Bristol. This was wrecked in dense fog, close to Port Eynon Point, in 1888.

A shoal extending to over 580m in length and to over 215m in width off Worms Head may have been an oyster fishing ground.

West Helwick was once marked by Lightship 91 but this was withdrawn in 1989. This was docked in Cardiff Bay for around 20 years but is now displayed in Swansea Marina as part of the Swansea Museum collection.

The coast includes Goat's Hole cave, Paviland, the richest Early Upper Palaeolithic cave site in Britain. This is noted for the discovery in 1823 of an adult male skeleton (the so-called 'Red Lady') covered in red ochre and ceremonially buried with ivory ornaments and perforated sea shells. Recent re-excavation of the site combined with a re-evaluation of the previously excavated artefacts and a suite of radiocarbon dates indicates that the human presence here dates back 50,000 years. The presence of an anatomically modern human around 26,000 BP raises questions about the timing of the colonisation of the British Peninsula by modern humans.

Longhole cave also preserves Palaeolithic evidence. The Red Chamber, a low-roofed coastal cave at Clovercliff which contains at least one inhumation, along with a varied faunal assemblage, including limpet and mussel shells, may also be evidence for Prehistoric activity. Deborah's Hole has Bronze Age remains.

A string of promontory forts stand guard over the hinterland such as Thurba, Deborah's Hole and Paviland Camps. The coast and hinterland form part of Gower Landscape of Outstanding Historic Interest.

A submerged forest /an extensive exposure of peat with tree stumps, fallen trunks and a surface that contains fragments of reeds is noted in the area, north of the Helwick Bank. The west coast paleolandscapes survey identified the sea as once being relatively high ground with high potential for surviving deposits. It recommended that every attempt is made to preserve deposits in situ.

Off Port Eynon is an extensive exposure of peat with tree stumps, fallen trunks and a surface that contains fragments of reeds. The peat overlies a grey clay from the surface of which, further to the east, a core and a fragment of burnt bone have been recovered.

The area is associated with the Rev. Dr William Buckland, a pioneer in scientific analysis as a means of reconstructing events from the distant past and in the understanding of fossilised faeces, and with the growing understanding of throughout the world of the nature of Prehistory.

The SCA forms part of Gower Landscape of Outstanding Historic Interest and lies within Gower AONB and Heritage Coast.

The area has inspired poetry. In 'On the Finger-tip of the Gower', William Condry (1918-1998) muses:

'A blue sea flowed to meet shining headlands and swept foaming into the bays between them ...there is just enough curve in the coast to give you a glimpse of Worms Head where it wriggles in to the sea...'

Painters have also been inspired by this rugged coast such as Sir Kyffin Williams. The drama of the coast has been used to attract visitors. A view towards Worms Head is used in a poster for rail travellers.



Gower Coast: Sir Kyffin Williams



Gower Coast, original poster printed for British Rail (Western Region), Gyrth Russell (1892-1970)

In terms of navigation, the Helwick Sands are a major navigation hazard and the area of sea between the shoal and Worms Head and the coast has reefs. The Helwick Channel narrows from the west to the Helwick Pass at the eastern end, tightly constrained by the sands and Port Eynon Point. The pass is normally avoided at night. The combination of these features and the strong tidal streams make the SCA particularly dangerous in westerly weather, and many sailors tend to keep well to the south of the Helwick Sands avoiding the overfalls. The shoal is marked by white flashing cardinal buoys to the east and west. The buoy at East Helwick has a fog signal/bell. Whilst the area may be avoided in poor weather it is popular in fair weather. At half-tide, a passage over the shelf and between the Worms Head and the mainland becomes navigable for shallow draft boats.

There is a coastal watch station at Worms Head operated during defined daylight hours by the National Coastwatch Institution and manned by volunteers (NCI website 2016). This is located in the National Trust land and was once a full coastguard station. The station plays a useful role in warning and assisting people who cross the causeway to Worms Head during low tide and get trapped by the incoming tide. The inshore lifeboat at Horton is alerted and assists the stranded

people alongside the Rhossili Coastguard Rescue Team.

This rocky coastal area is mostly used for potting for lobster and crab, with whelks further out to sea. Onshore the hand gathering periwinkles has been noted. Commercial rod and line fishing is practised, mainly to the west. Light Otter Trawl has been recorded in the area. Recreational rod and line fishing is prevalent throughout. Species include bass and tope in the summer and rays, conger, whiting (and dogfish) in winter.

The middle part of Helwick Bank is licensed for extraction of sand and gravels but is currently not used.

Cruiser sailing runs relatively close to the coast between Tenby, Burry Port and Swansea. Wildlife trips run along the coast in the summer season visiting features such as Paviland Cave. Sea angling is carried out both around Worms Head and along the rocky coast. Diving is occasionally carried out close to shore and the Head to explore the rocky coastline. Kayaking close to the coast is popular. The small beaches at Fall Bay and Mewslade Bay are used by locals and a few surfers.

Climbing is popular along virtually the whole length these cliffs. Coasteering has been recorded to the west near Worms Head. Caving is carried out along the coast such as around Deborah's Hole. The Wales Coast Path follows the coast and runs through coastal heathland mosaic, sometimes close to the cliff tops and sometimes along the boundary with the adjacent agricultural hinterland. This part of the coast is hardly accessible by car so there are fewer walkers here. There are varied views along the rocky, jagged and exposed south facing limestone coast. There are potential diversions running to caves and Culver Hole is particularly noticeable from the sea, being a medieval stone built dovecot set into a long fissure in the cliff.

There is no settlement in this character area. A series of farmsteads sit within the pastoral land behind the coastal strip.

Aesthetic, perceptual and experiential qualities

This area contains a dramatic linear stretch of cliffs and incised valleys, with the coast path running along the top on a narrow strip of pasture or coastal heath. The cliffs are strongly angular and bedded, interspersed with narrow, short and steep valleys running to the coast. There are small rocky coves and caves, and jagged rocky platforms which only show at low tide. The cliffs rise, sometimes near vertically, to around 60-70m, creating an exhilarating and exposed experience when walking the coast path and looking over at views to the rocky shores below. At the western end of this stretch, close to Rhossili, a remote sandy beach at Mewslade Bay and Fall Bay appears at low tide.

There is a distinct sense of history, with caves such as Paviland Cave near sea level, and remnant hillforts on the top of the cliffs. Culver Hole, with its built walls and openings, is particularly noticeable from the sea.

Due to the relative straightness of this of coastline, there is no location where there is a clear view along the whole stretch, so that coves and cliff formations reveal themselves only sequentially along the Coast Path, or from the sea. Looking out to sea one can see the distant outline of the Exmoor massif or Lundy on very clear days.

The sea crashes against the rocky shoreline even on relatively calm days, and leisure boating trips occasionally ply close to shore disturbing the sense of remoteness and tranquillity.

There are no detractors along this unspoilt coastline which has very limited development on its hinterland. Due to its relative inaccessibility, open only to walkers along the Coast Path and occasional boat trips, the area feels tranquil and relatively remote. It also has a strong sense of wildness.



The wavecut platform off Rhossili linking Worms Head with the peninsula.



The coast east of Tears Point

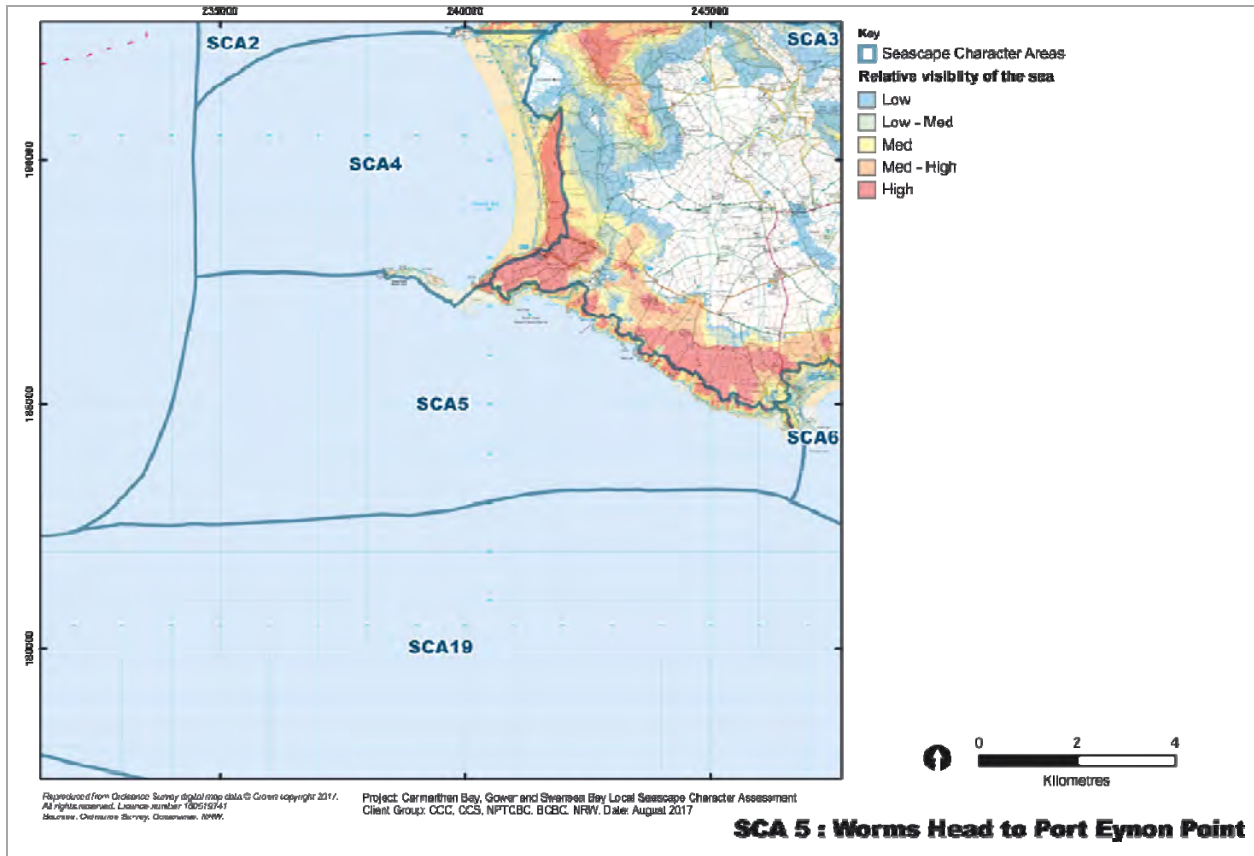
Cultural benefits and services

The area contributes towards leisure and recreational services improving health and well-being through the various activities on the beaches and along the coast including swimming, walking, sailing and wildlife boat trips, and to natural heritage in the SCA and various SSSIs covering cliffs, coastal heath and foreshores, and in the form of views along the coast and out to sea towards Lundy.

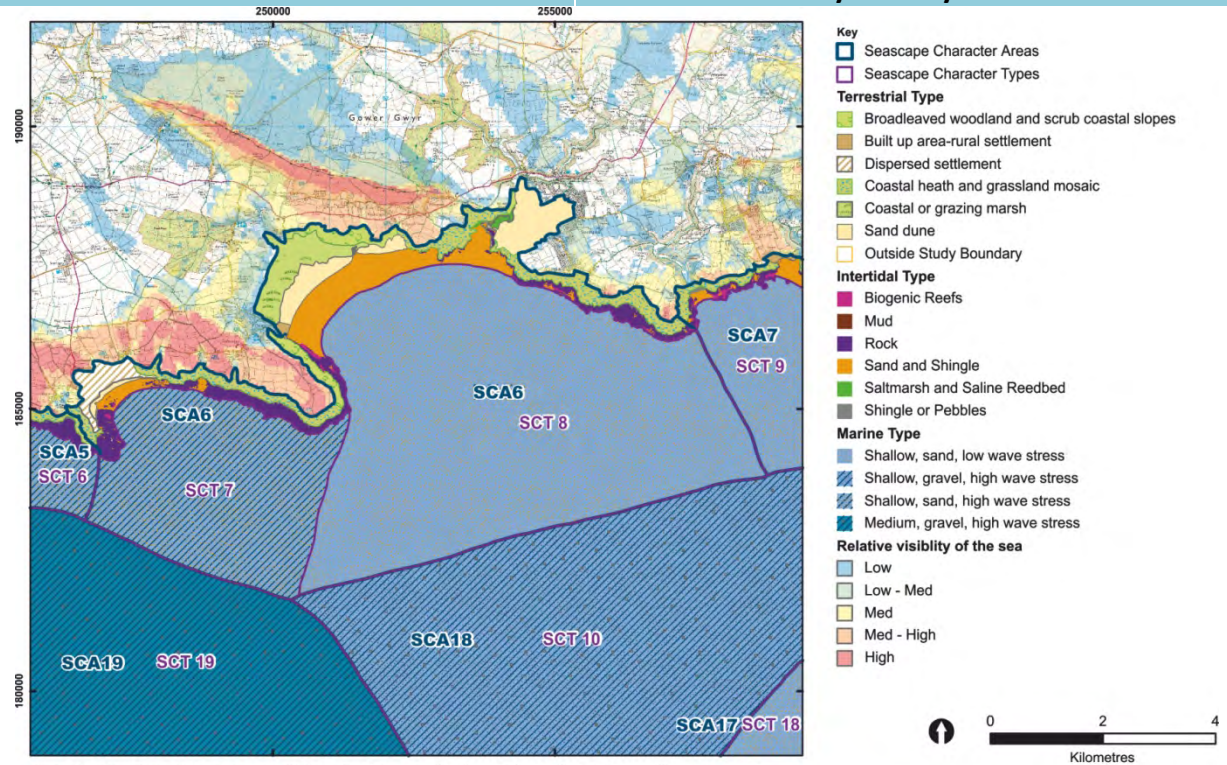
Forces for change

Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality	■	■			■		
Views to and from the sea/land	■	■			■		
Diversity of seascape/landscape	■	■					
Sense of place	■	■					
Remoteness, tranquillity and wildness		■					
Distinctive geology /coastal processes	■						
Rich habitats and biodiversity	■	■					
Rich archaeology and built heritage	■	■					
Strong cultural associations	■						
Access to the coast or sea	■						
Valued beaches	■	■					
Key							
	■	Existing or potential change that may affect the selected special quality					

Summary	
<ul style="list-style-type: none"> • The natural forces for change are changing patterns of sediment movement along the Helwick Bank, and the slow erosion of the rocky cliffs and platforms. Sea level rise and increasing severity of weather will affect this and will also affect and change the intertidal communities. Erosion has necessitated relocation of the Coast Path. • The SMP long-term objectives are to allow the coast to evolve and retreat naturally through no active intervention. This will not affect any manmade structures. • Pressure of increasing visitors to the coast/sea for active sports eg increased use of the coast and small beaches for surfing, paddle boarding and the use of kayaks. • Pressure of increasing visitors along the coast from the honeypot at Rhossili in terms of walkers and off road cyclists along the Coast Path. The increased use of the beaches also leads to pressure on the roads for parking. • Helicopters on leisure flights at low altitude disturb the tranquillity of the coast. • Other forces for change include potential future sand dredging at Helwick Swatch although this may be unlikely in the short/medium term. 	
Key sensitivities	
Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The nature conservation value of the SAC and SSSIs along the coast.</p> <p>The open, exposed unspoilt character of the area offshore with a sense of wildness and views towards Lundy.</p> <p>The exposed, unspoilt, wild and tranquil character of the indented rocky coastline and headlands with distinctive rock formations and caves with coastal heath and grassland.</p> <p>The intrinsic character of the small sandy coves framed by headlands.</p> <p>The very limited amount of settlement.</p> <p>The setting of various historic features and caves eg at Paviland and Culver Hole.</p> <p>The presence of submerged forest exposures.</p> <p>Views along the coast, towards Worms Head and Lundy from the clifftop walks and some beaches.</p> <p>Users of the Wales Coast Path and the wildlife tours, and leisure boaters from Swansea are sensitive receptors.</p>	<p>The minor isolated dwellings south of Great Pitton Farm which are atypical.</p>



Seascape Character Area No:	6
Seascape Character Area Name:	Oxwich and Port Eynon Bays



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Project: Carmarthen Bay, Gower and Swansea Bay Local Seascape Character Assessment
Client Group: CCC, CCS, NPTCBC, BCBC, NRW. Date: August 2017

SCA 6: Oxwich and Port Eynon Bays



Three Cliffs Bay- the iconic cliffs set in the sandy bay



Oxwich Bay- in the summer



Port Eynon Bay from offshore

Summary Description

The SCA forms the central core of the Gower peninsula coastline with two south east facing bays bounded and sheltered by more exposed limestone headlands and cliffs with rocky foreshores. The seabed is gently shelving and sandy and the beaches are backed by dunes and burrows and, in Oxwich's case, also by marshland. The beaches are very popular destinations for visitors with a variety of beach activities. Oxwich is the largest and most popular, closely followed by Port Eynon. Three Cliffs Bay is less accessible but rewards the visitor with one of the iconic views of the Gower peninsula.

Key characteristics

- South east facing bays bounded, and separated, by Carboniferous limestone headlands, cliffs and rocky foreshore.
- Very shallow sandy seabed coarsening to sandy gravel out to sea.
- The beaches are backed by dunes, which are very extensive and varied in the case of Three Cliffs Bay, and there is marsh behind Oxwich Bay.
- Wave energy is low in Oxwich Bay but high energy on the rocky coasts and headlands which are exposed to the wind, waves and tidal currents.
- Around Pwll-du Head intertidal wavecut platforms support honeycomb worm reef.
- Port Eynon Bay is part of Carmarthen Bay and Estuaries SAC. The headlands and associated coast are part of the Limestone Coast of South West Wales SAC. Oxwich is a National Nature Reserve and most of the rest is SSSIs.
- Historically, the area has been used in trade particularly from Port Eynon which once had a small harbour, quarries and salt production.
- The coast exhibits historic defensive features such as promontory forts and Oxwich Castle which add drama to the coastal views.
- Wrecks in the bays include those from two World Wars.
- The open semi-natural hinterland backcloth of the undeveloped eastern part of Cefn Bryn contains part of the coast, especially around Oxwich, and forms part of Gower Landscape of Outstanding Historic Interest.
- Small boats use the area for fishing and cruising round the coast and Oxwich Bay is used to launch wildlife boat trips.
- The beaches are very popular, especially Oxwich, and support a range of beach related activities as well as windsurfing and kite boarding.
- Development is limited and low key around Three Cliffs Bay which is relatively unspoilt with semi-natural vegetation. Settlement at Oxwich is discreet, largely contained by the landform and trees to the west with a simple unspoilt beach hinterland. Development at Port Eynon to the west and Southgate to the east is more prominent within the bay and on the clifftops respectively.
- There are superb views across the bays and out to sea, in particular at Three Cliffs Bay where the isolated cliffs wrapped around by the beach and watercourse of Pennard Pill form an iconic feature of the Gower peninsula.
- Caravan parks overall, and housing at Southgate detract from the area's natural character.
- The area is part of Gower AONB and Heritage Coast.

Natural influences

Port Eynon and Oxwich Bays are south east facing bays that are bounded by Carboniferous Limestone headlands/points. The sea bed geology is approximately east west striking, with Carboniferous Limestone overlain southwards by Upper Carboniferous mudstones and sandstones, and then Triassic mudstones. These have a thin Quaternary cover. The sea bed sediment is sand, coarsening into slightly gravelly sand and sandy gravel out to SCA18 to the south.

Port Eynon Bay is very shallow, shelving gently ($<1^{\circ}$) out to <20 m depth. Off limestone headlands such as Oxwich Point and Pwlldu Head the slope is slightly higher ($<2^{\circ}$). The fine sand beach is backed by dunes. Oxwich Bay shelves gently ($<1^{\circ}$) except for the shallow area of St Christopher's Knoll in Three Cliffs Bay. Wave energy is lower in Oxwich Bay, but Port Eynon Bay, Three Cliffs Bay and the Pwlldu coast are all higher wave energy, exposed to wind, waves and tidal currents. High wave energy decreases southwards into the Channel.

The prevailing winds and waves are from the south west. Tidal range is up to >8 m, leading to separation of Oxwich Bays and Three Cliffs Bay at high tide. There is a race off Oxwich Point, except at slack tide. Beach erosion from storms affects mainly the upper beaches and these largely repair naturally. Sediment transport overall is easterly. Blown sand onshore feeds the variety of dune systems in the area (climbing, bay, spit, hindshore). Stream channels transport sediment offshore. Limestone cliffs are affected by wave abrasion and erosion.

In Oxwich Bay, the sand beach is backed by extensive former dune fields- Oxwich Burrows, Nicholaston Burrows, Penmaen Burrows and Pennard Burrows. Behind the dunes the freshwater Oxwich Marsh is crossed by drainage channels, the Penrice valley stream eventually opening into Oxwich Bay. The fault controlled Pennard Pill stream valley drains into Three Cliffs Bay. From Three Cliffs Bay to Pwlldu the coastline is an exposed rocky limestone coast with cliffs, rocky foreshores and small, fault controlled embayments. These are cut into the roughly east/west striking Carboniferous Limestone, although another anticline brings up some Old Red Sandstone beneath Penmaen.

Cefn Bryn ridge (<182 mAOD) sits above Oxwich Bay providing a high backcloth. The 70-90mAOD Gower plateau is widely covered by Quaternary till but rocky limestone cliffs and foreshores are exposed along the coast.

Port Eynon Bay is part of Carmarthen Bay and Estuaries SAC. Harbour Porpoise, the smallest UK marine mammal, is evident in both bays and particularly west of Three Cliffs towards Pwlldu Head. Pods of dolphins are apparent in the area including in Port Eynon Bay. The headlands and associated coast are part of the Limestone Coast of South West Wales SAC. Oxwich is a National Nature Reserve. Gower Coast: Rhossili to Port Eynon, Horton, Eastern and Western Slade, Oxwich, Pennard Valley and Pwlldu Head and Bishopston Valley are SSSIs.

The intertidal beach at Port Eynon is littoral fine sand and muddy sand with Polychaetes worms. The main core/part of the wave cut platform to the west features Acorn barnacle, Common limpet and Sea snails spp. on exposed to moderately exposed or vertical sheltered eulittoral rock. The platform also hosts dense foliose red seaweeds on exposed upper infralittoral rock and *Fucus vesiculosus* on mid eulittoral mixed substrata in patches. Yellow and grey lichens on supralittoral rock and *Verrucaria maura* lichenised fungi on very exposed to very sheltered upper littoral rock fringe the platform. Barnacle spp. with blue mussels on very exposed eulittoral rock continue to east of the beach and round into Oxwich.

In Oxwich Bay and Three Cliffs Bay the slightly muddy fine sand on the lower shore features the sea potato, a sea urchin, and *Ensis* spp. Fine sand lies behind including speckled sea louse in littoral mobile sand and Talitrids on the upper shore and strand-line. Barren littoral shingle lies behind the beaches in parts.

The very exposed to very sheltered upper littoral fringe rock behind and to the east and west of Three Cliffs Bay are covered with *Verrucaria maura* lichenised fungi. To the east *Laminaria digitata* is on moderately exposed sublittoral fringe bedrock. Toothed wrack or serrated wrack and red seaweeds and Barnacle spp. lie on moderately exposed lower eulittoral rock.

Behind the beach, Oxwich accommodates a calcareous dune, dune slacks, saltmarsh, freshwater marsh, open water, fen carr, flanked by partially wooded limestone slopes. On the cliff tops and

slopes lies a complex mosaic of limestone grassland with gorse heath scrub and maritime heath. Around Pwlldu Head there are maritime heath mosaic and grasslands on the cliffs, and a collection of bryophytes on the Head.



Lobster boats just offshore Oxwich Point



The stepping stones at Three Cliffs Bay with Oxwich Point in the distance

Cultural influences

These south east facing bays have been used historically by vessels for trade (especially Port Eynon) and shelter in westerly/northerly winds but can be hazardous in some wind and tidal conditions. There are wrecks in both bays. Port Eynon churchyard contains the memorial to the local lifeboatmen who lost their lives on 1 January 1916 going to the assistance of the *SS Dunvegan*, wrecked in the bay. Another wreck was the *Solor*, a steel-hulled tanker built at Gothenburg, in 1938, torpedoed on its voyage from New York on 27 January 1945. Four of the 44 crewmen lost their lives. The aft section is sometime visible at low tide at the western side of the bay.

The west coast paleolandscapes survey identified this area as once being high ground, with medium/high potential for survival of deposits. Where possible, deposits should be preserved in situ.

A submerged forest in peat beds is located in Port Eynon Bay sometimes exposed above shifting sands. There are rare human footprints here as well as prehistoric tree stumps and other finds which are a reminder of lower sea levels in Mesolithic times.

Two natural sites which contain important evidence of late glacial human colonisation are Minchin Hole and Bacon Hole, spectacularly located in the cliffs above the sea. Bacon Hole has also yielded evidence of Iron Age occupation. Penmaen Burrows burial chamber dates from the Neolithic period.

Defensive features are evident on the coast and hinterland - promontory forts such as High Pennard, castles at Penmaen and Oxwich castle, a 16th century fortified manor house, now in ruin, on the promontory between the two bays. This was constructed by Sir Rice Mansel 1541 but incorporates fabric of the late medieval Oxwich Castle. Penrice Castle is a fortress fitted onto a blunt headland on the northern side of Penrice Dingle. The earliest surviving remains are of mid-13th century date, and the landscaping associated with the eighteenth century house to the south. A later defensive site is the radar station at Oxwich Bay.

The remains of a 16th century salt-house survive at Port Eynon where there is also evidence for a small harbour. The villages of Port Eynon, Horton and Oxwich are located near the shore. There was some quarrying in the hills-slopes immediately inland and on the sea-shore, and salt-boiling.

On Oxwich Point there are the remains of the Second World War Coast Defence/Chain Home Low radar station comprising of three single-storey concrete buildings. The purpose was an anti-invasion defence measure designed to guard against both low-flying enemy aircraft and shipping in the Bristol Channel. The scheduled monument is of national importance as it illustrates the development and use of radar.

The coastal part of the SCA lies within Gower AONB and Gower Heritage Coast and Gower Landscape of Outstanding Historic Interest covers Cefn Bryn in the hinterland and the western end of the coast.

The bays have been the subject of artists. Three Cliffs Bay has been much photographed and forms one of the iconic images of Gower. #



Three Cliffs Bay, Autumn Sunshine, Rowan Huntley.



Gower Coast, Adrian Homersham

In terms of navigation, there are daytime anchorages in both Port Eynon and Oxwich Bays which offer shelter in light westerly and northerly winds. There are extensive overfalls off Oxwich Point which are only quiet at slack water. St Christopher's Knoll is a shoal but does not break the surface. There are no navigation markers in the area. As with the rest of the inshore waters along the Gower peninsula Coast this area is best not navigated by recreational boats at night. There is an inshore lifeboat station at Horton (Port Eynon).

The rocky parts of this coast are mostly used for potting for lobster and crab, with whelks further out to sea. Onshore the hand gathering of razor clams and periwinkles has been noted around Port Eynon Head. Set beach nets, such as for bass, have also been used within the area, probably at Oxwich. Commercial rod and line fishing is practised, mainly to the south. Light Otter Trawl has been recorded out to sea. Recreational rod and line fishing is prevalent throughout. Species include bass and tope in the summer and rays, conger, whiting (and dogfish) in winter.

Cruiser sailing runs along the coast between Tenby, Burry Port and Swansea. Wildlife trips travel along close to the coast in the summer season usually starting from Oxwich Bay and travelling to Worms Head. The western corner of the bay is a popular sheltered anchorage for visiting yachts & motor cruisers out of the marinas & clubs in Swansea and there is a slipway onto the beach allowing the launch of dayboats. Port Eynon Bay also has a slipway allowing the launch of dayboats and is used for windsurfing and kite boarding, with slightly less use around Oxwich Bay. There is sea kayaking and wake boarding is carried out in Oxwich Bay.

Bathing water quality is excellent for all beaches. Oxwich beach is very heavily used, especially by day trippers, mainly for sunbathing and swimming but also for some surfing supported by a seasonal surf school operating out of a mobile facility. It is privately owned. Port Eynon beach is heavily used, especially by locals, mainly for sunbathing, swimming, some surfing and body boarding. Jet skis are no longer allowed on the beach. The beach at the Slade is very lightly used. The less accessible Three Cliffs Bay is moderately popular for sunbathing, swimming and climbing. Sea angling is carried out off all the beaches.

Diving is occasionally carried out on the western side of Oxwich Bay to explore the rocky coastline and wrecks. Caving is carried out along the coast to the east such as around Minchin Hole Cave. Climbing is moderately popular on the cliffs and headlands. Coaststeering at relatively low levels of intensity has been carried out around Three Cliffs Bay and to the east towards Pwlldu.

Submarine cables leave Britain to cross the Irish sea within this area.

The Wales Coast Path follows a route behind the dunes in the bays rising to the tops of the intervening cliffs. Views are intermittent along the path due to dunes and woodland, such as the sheltered woodland in Oxwich Bay. However, where views are possible, there are superb vistas across the bays such as towards the distinctive landform at Three Cliffs Bay. Here the path crosses Pennard Pill in on stepping stones.

Settlement within the SCA includes the historic villages of Port Eynon and part of Horton, which now include extensive caravan parks. To the east of Pennard Burrows the area is edged by

residential and plotland development, and white rendered houses on high land on the south of Southgate are prominent from high on the coast path such as from Pwlldu Head.

Aesthetic, perceptual and experiential qualities

This area provides a range of perceptual experiences. The two south east facing bays are separated by the large headland of Oxwich Point which is the dominant landform enclosing the bays, combined with the strong backcloth of Cefn Bryn behind Oxwich Bay. Oxwich Bay comprises an extensive sweeping, simple shallow sandy beach, backed by extensive dunes and marsh, curving between the cliffs west of Pwlldu Point and the wooded slopes on the lee of Oxwich Point. Port Eynon Bay to the west, with its beach and rocky platforms backed by dunes, is somewhat smaller and less contained.

Three Cliffs Bay has a relatively remote feeling where access requires a long walk from elevated positions including across dunes and the river, enclosed by sandy slopes. The revealing of the views to bay after a walk is an exhilarating experience with the Three Cliffs rocky outcrops forming an iconic visual focus, often in shadow and bounded by the elegant sweeping curves of the small river and beach. The beach is popular with more mobile visitors due to its beauty, large beach and potential for climbing.

Oxwich Bay is accessible with a large beach edge car park and so is busy, especially in the summer. However, the dunes in the National Nature Reserve backing the majority of the beach absorb people and the settlement itself is mainly discreetly located within trees, tucked into the lee of the headland.

Port Eynon Bay is also busy but the settlement is more open and extensive with less tree cover. Thus the car parks and movement, backed by extensive housing and caravan parks, are more apparent, especially at higher levels. The rural and semi-natural coastal slopes to the east and west are important in containing the bay and development.

Dunes are a distinctive feature containing all these beaches, varying in character from the extensive hilly area of dunes running up the slopes at Three Cliffs Bay, a narrower strip of dunes at Port Eynon, and dunes with a quiet and low lying marsh area at Oxwich. These provide areas of retreat and shelter from the busier parts of the beaches.

Views from the beaches are framed by the enclosing headlands, but Oxwich Bay has an open and expansive feeling. Wooded slopes contain the beaches on the more sheltered west and northern sides of Oxwich Bay, whilst at Port Eynon there are many white rendered houses overlooking the bay which give it a slightly more suburban context.


In all areas the shallow sandy beaches feel quite extensive at low tide. The beaches generally feel quite sheltered especially where close to the enclosing headlands.

The view from the sea is dominated by the enclosing headlands and cliffs and large landform of Cefn Bryn. The sweep of golden sandy beaches give a further sense of unity. The Three Cliffs look relatively small in scale but their distinctive shapes stand out from the other cliffs and the simple semi-natural backdrop. There is contrast in south westerlies/westerlies between the sheltered water of the bay and beyond the headlands into exposed water.

The main detractors are the caravan parks at Port Eynon and Horton, and prominent linear housing at Southgate- East Cliff and West Cliff, which detract from the natural character of the coast. These are prominent from both the beaches and from the sea.



Port Eynon- panorama of the beach

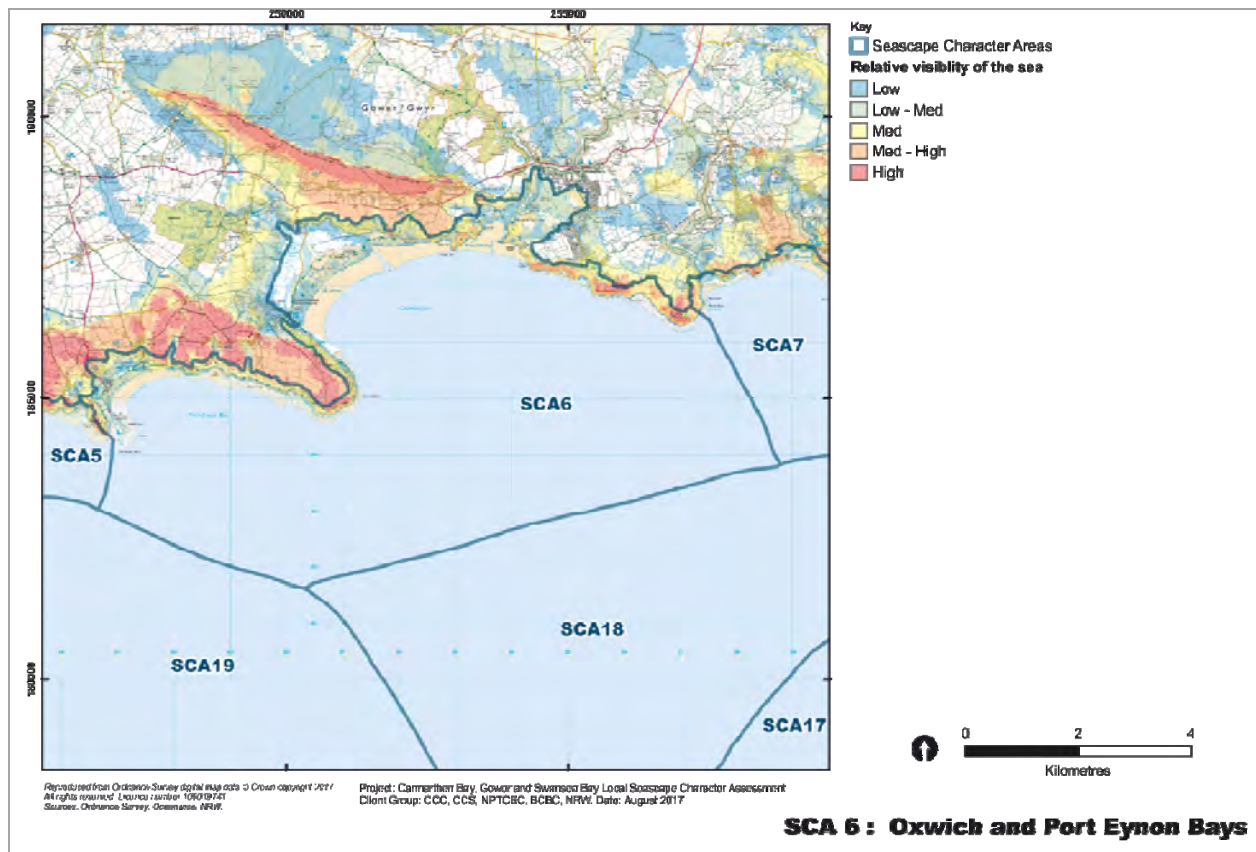
Cultural benefits and services							
The area contributes towards leisure and recreational services improving health and well-being through the various activities on the beaches and along the coast including swimming, walking, sailing and wildlife boat trips, and to natural heritage in various SSSIs and National Nature Reserve covering cliffs, coastal heath and foreshores and dunes, and in the form of views out to sea and towards Exmoor.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key  Existing or potential change that may affect the selected special quality							
Summary							
<ul style="list-style-type: none"> The area is sensitive to sea level rise and increasing severity of weather which has already recently caused sand to be removed from Port Eynon Bay, with the dunes receding 6-8m, exposing the storm water outfall, exposing the foundations of the slipway at Port Eynon, making the structure less useable, and exposing the submerged forest to damage and erosion. Other structures and buildings in both bays may come under threat over time. Erosion has necessitated the relocation of the Coast Path in places. The SMP long-term objective for the main beaches and dunes are to manage the realignment of the coast to enable the dune systems to respond and evolve naturally through long-term habitat management activities. At Port Eynon the realignment of the existing car park may need to be considered. A limited number of residential and non-residential may need to be protected. The objective for intervening rocky coasts is of no active intervention, to allow the coast to evolve and retreat naturally. Port Eynon and Oxwich Bay currently have some 							

privately funded coastal defences.

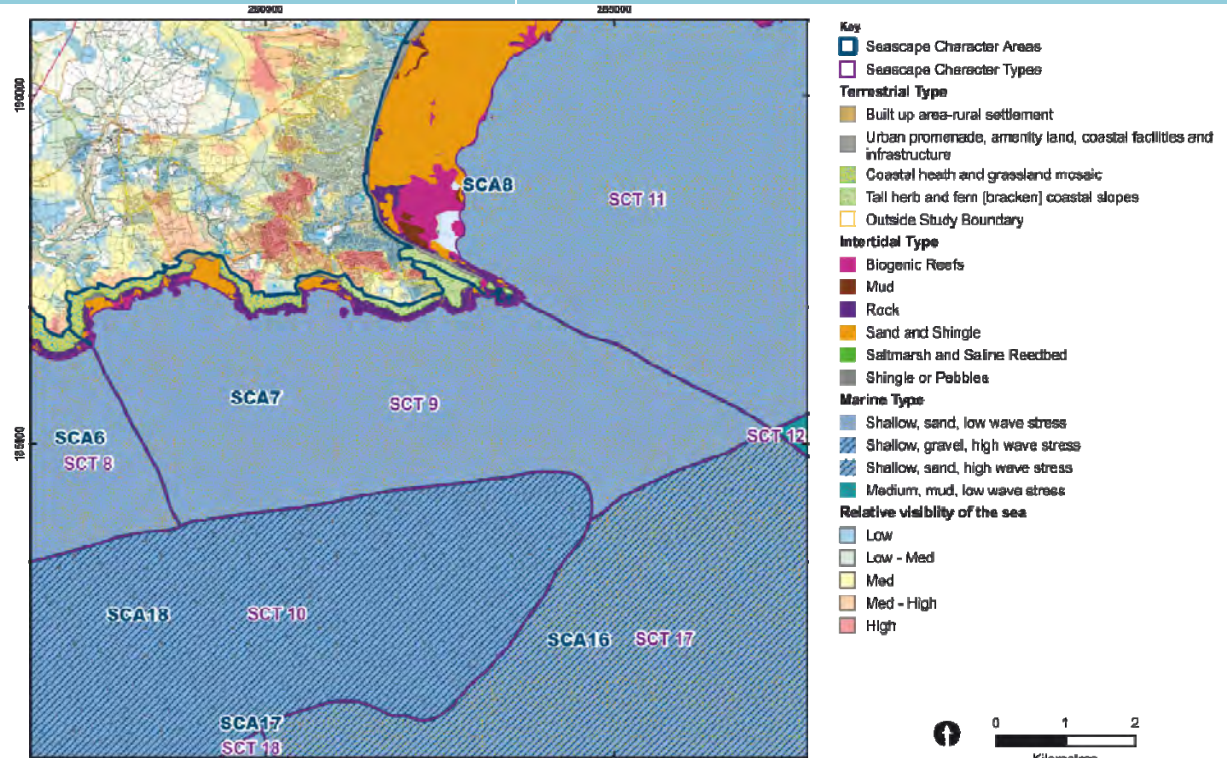
- Pressure of visitors on Oxwich and Port Eynon beaches and hinterland, including unauthorised use of jet skis which adversely affect tranquillity.
- Erosion of the Wales Coast Path and archaeological features around these honeypots.
- Potential expansion of leisure facilities such as caravan parks in the bays and housing (eg glass fronted larger units) along cliff tops which can be visually intrusive and reduce tranquillity.
- Potential aquaculture may have a positive or negative effect on biodiversity depending on management and may have an effect on seascape character if there are permanent surface structures.
- Use for tidal lagoons would be likely to have adverse effects on seascape character.

Key sensitivities

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The nature conservation value of nature reserves and SSSIs along the coast.</p> <p>The open, exposed unspoilt character of the area offshore with a sense of wildness and views towards Lundy and Exmoor.</p> <p>The intrinsic character of the large sandy beaches framed by unspoilt headlands.</p> <p>The intrinsic exposed and unspoilt character of the indented rocky coastline and headlands between the beaches with coastal heath, grassland and woodland.</p> <p>The unspoilt nature of Oxwich and Three Cliffs Bays with very limited and discreet development pattern.</p> <p>The setting of Oxwich Castle.</p> <p>The presence of submerged forest exposures.</p> <p>Views towards Lundy and Exmoor from the beaches and clifftop walks.</p> <p>Users of the Wales Coast Path and the wildlife tours, and leisure boaters from Swansea are sensitive receptors.</p>	<p>The modern built form of Port Eynon and Southgate.</p> <p>The presence of caravan sites.</p>



Seascape Character Area No:	7
Seascape Character Area Name:	Pwlldu Head to Mumbles Head



SCA 7: Pwlldu Head to Mumbles Head



Langland Bay beachfront in summer



Mumbles Head and the iconic lighthouse



Caswell Bay with associated development viewed from the sea

Summary Description

The SCA forms the eastern end of the south Gower coastline terminating at the distinctively profiled Mumbles Head with its lighthouse. The indented coastline of sloping limestone cliffs has three small sandy bays and several smaller coves. The seabed is gently shelving and sandy, increasing in depth offshore except at Mixon Shoal which dries at low tide and is a hazard. The area is popular for leisure boating and recreational fishing vessels out from Swansea. The beaches at Langland Bay and Caswell Bay are accessible and very popular destinations for beach activities. The scenic natural character of the coastline acts as a positive backcloth to suburban development especially around Langland and Bracelet Bays.

Key characteristics

- The indented sloping limestone cliff and rocky coast from Pwlldu to Mumbles Head has three small sandy bays at Pwlldu, Caswell and Langland, and several smaller coves.
- The sea bed shelves gently out to sea coarsening from sand to sandy gravel. The Mixon Shoal, exposed at low tide, is a hazard south of the Mumbles.
- The coast is exposed to the prevailing wind and the wave energy is high in south-west facing parts, and wave swells can be high.
- To the west, there are intertidal wavecut platforms supporting honeycomb worm reef.
- There is maritime heath mosaic and grasslands on the cliffs but these are limited in scale.
- There are seal haul outs at Limeslade Bay and Brandy Cove.
- The coastal sections at Pwll-du Head and Bishopston Valley, Caswell Bay, Langland Bay and Bracelet Bay are SSSIs.
- The Mixon has caused a number of losses to shipping as well as to the oyster fleet which historically was based at the Mumbles.
- There is a promontory fort at Caswell Cliff.
- The area is long established as a leisure destination with the focus on Langland and Caswell Bays.
- Langland and Caswell Bay beaches are very popular for general beach activities and surfing.
- Pwllu Du Bay, to the west, is relatively quiet and rural and so is the exception.
- The area is popular for commercial and day fishing, and sailing out from Swansea.
- The coast is indented and medium scale with small enclosed bays fringed with cliffs and semi-natural vegetation and trees in sheltered locations, which provide an important rural setting and continuity.
- The popularity of the area means that it is busy in season and development impinges on the accessible bays and some clifftops, giving it a suburban character in places towards the east.
- Between the main bays there is some tranquillity but nowhere feels remote.
- Mumbles Head to the west of SCA 7 forms an iconic feature at the mouth of Swansea Bay with the lighthouse on the outer of the two distinctively profiled tidal islets.
- The area is part of Gower AONB and Heritage Coast.

Natural influences

The sloping limestone cliff and rocky coast from Pwlldu to Mumbles Head has three small embayments, Pwlldu, Caswell and Langland, and several smaller coves. The east-west striking

Carboniferous Limestone of the coast is overlain offshore southwards by Upper Carboniferous mudstones and sandstones, and then Triassic mudstones. These are overlain by a thin Quaternary cover. The sea floor sand sediment coarsens south into slightly gravelly sand and then to sandy gravel in SCA18.

The marine shelf slopes gently ($<1^{\circ}$) south east to south to a depth $<20\text{m}$, but roughly east-west shoals (Mixon Shoal) with areas of exposed mudflats lie offshore from Mumbles Head. The exposed coast is abraded by waves and tidal currents, with the prevailing winds and currents from the south west. Wave energy is high. Tidal range is up to $<8\text{m}$, and wave swells can be high. The current is 2.5 knots at springs a mile off Mumbles Head and there is the Cherrystones race near Mumbles.

The bays have sandy beaches and are fringed by cliffs or rocky foreshores. Sediment is transported into the bays by streams such as in the Bishopston valley and at Caswell, while sediment transport offshore is controlled by the Bristol Channel tidal currents. Transport overall is eastwards. The limestone coast from Pwlldu to Mumbles Head is incised into east-west striking Carboniferous Limestone, with embayments and stream valleys controlled by faults. The limestone is widely covered by glacial till across the Gower peninsula plateau (70-90m AOD).

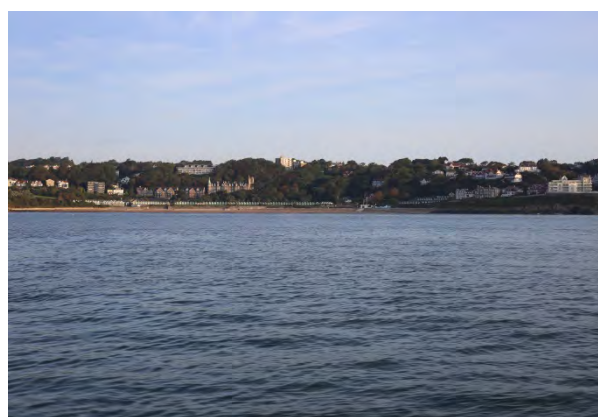
The coastal sections at Pwll-du Head and Bishopston Valley, Caswell Bay, Langland Bay and Bracelet Bay are SSSIs. The latter are for geology. Coughs occur around Pwlldu Head. There is a Wildlife Trust Reserve at Redley Cliff and a local nature reserve at Mumbles Hill. Harbour Porpoise, the smallest UK marine mammal, is evident particularly south of Limeslade Bay and Mumbles Head where it thrives in the strong currents. Dolphins are apparent and there are seal haul outs at Limeslade Bay and Brandy Cove.

The beaches tend to be littoral fine sand and muddy sand backed by barren shingle. Either side of Pwlldu Bay and extending around the Head there are Honeycomb worm reefs on sand-abraded eulittoral wave cut platforms and Barnacle spp. on exposed eulittoral rock. Blue mussels and toothed wrack or serrated wrack and red seaweeds on moderately exposed lower eulittoral rock.

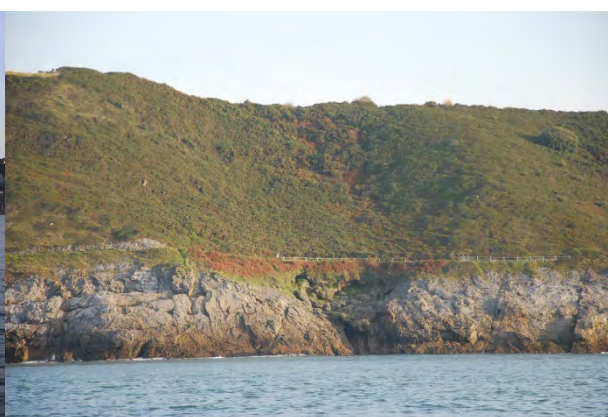
East of Caswell Bay, blue mussel and barnacles occur on very exposed and exposed eulittoral rock, Fucoids and kelp lie in deep eulittoral rockpools and *Laminaria digitata* are found on moderately exposed sublittoral fringe bedrock. At Langland Bay, Acorn barnacle, common limpet and sea snails spp. are found on exposed to moderately exposed or vertical sheltered eulittoral rock. Toward the Mumbles, the south facing rocky coast features barnacle spp. are found on on exposed eulittoral rock and toothed wrack or serrated wrack and red seaweeds lie on moderately exposed lower eulittoral rock. Honeycomb worm reefs lie on sand-abraded eulittoral rock near Mumbles Head.

Throughout, *Verrucaria maura* lichenised fungi lies on the very exposed to very sheltered upper littoral fringe rock.

There are maritime heath mosaic and grasslands on the cliffs. Around Caswell Bay there are limestone cliffs and a raised beach with glacial deposits. Juniper, hoary rock rose and a rare *Sorbus* (whitebeam) occur in grassland at Newton Cliffs.



Langland Bay viewed from the sea showing the development pattern



The coastal path between the coastal settlements with noticeable fencing

Cultural influences

Historically, oyster trawling between Mixon shoal and the Mumbles was common. Unfortunately, the shoal has been responsible for the loss of many oyster fishing vessels from the Mumbles fleet. Other losses on the Mixon include the *HLC*, a wooden brigantine, on 1 March 1891, and the *Fort Medine* at the eastern end of the area. This was a 'Standard' ship built under an emergency war policy, carrying 7,000 tons of iron from Wabana to Port Talbot when it struck a mine and foundered on 20 February 1941. The wreck lies in two pieces, but remains a prominent feature of the flat sandy seabed. Other shipwrecks include vessels in the home-waters trade, though one from further afield was the *Triton*, built in 1871 by Cattarinch at what is now Lošinj in Croatia but was then officially Lussino. After setting sail from Swansea for Eckeneforde with a cargo of salt, it was driven ashore on Mixon Sands and began to break up. The Kaiser later presented the Coxswain of the lifeboat with a pair of binoculars and a sum of money for each crewman. The master of the Swansea paddle-tug *Digby Grand*, which had helped with the rescue, received a telescope from him.

The west coast paleolandscapes survey identified this area as once being high ground, with medium/high potential for survival of deposits. Where possible, deposits should be preserved in situ.

The trace of a promontory fort is visible at Caswell Cliff. Landing places are evident.

There was some mineral extraction in the immediate hinterland, as well as lime-burning, and hotels were established before the end of the 19th century. Much of the eastern part of the hinterland of this area is now an extension of Mumbles. The comparative affluence of the area is evident in the larger modern houses and their gardens, and also the hotels. This coast is a long-established place of leisure and relaxation. For instance, Caswell Bay is popular because of its easy accessibility, car parking, seasonal bus service, shops and cafes, public toilets, open air showers, and seasonal lifeguarding. Pwlldu and Brandy Cove can only be reached on foot, and are less visited.

Alfred Sisley painted eleven paintings in the 1890s around Langland Bay and Rotherslade Bay and are regarded as some of his finest work, among them *Storr's Rock*, *Lady's Cove* and *Evening* owned by National Museum Wales. Along with paintings around Penarth to the east, these are his only sea pieces and show the energy and excitement of a new discovery. Some say they capture the intense heat and light of the Gower Peninsula.

#



Lady's Cove-Langland Bay Morning, A. Sisley (1897)



Storr's Rock, Langland Bay-Morning, A. Sisley (1897)

In terms of navigation, this coastal area with small bays and headlands marks the transition from the South Gower coast to outer Swansea Bay. The Mixon Shoal's small drying sand bank is marked to the south by a lit red can buoy with a bell. Most boats will travel to the south of the buoy but there is an opportunity for shallower draught boats to pass to the north in quieter weather. The Cherry Stones race lies within 0.5km of Mumbles Head.

The distinctive operational white lighthouse on Mumbles Head is a strong landmark marking the western extent of Swansea Bay. A coast guard station (now only used for training) is located just west of Bracelet Bay. This was strategically placed to monitor traffic into and around Swansea Bay

in a wide arc from the South Gower Coast to Porthcawl and across the Bristol Channel.

The rocky parts of this coast are used for potting for lobster and crab, with whelks further out to sea. Onshore, the hand gathering of periwinkles has been noted. Commercial rod and line fishing is practised, mainly to the south. Light Otter Trawl has been recorded out to sea. Recreational rod and line fishing is prevalent throughout. Species include bass and tope in the summer and rays, conger, whiting (and dogfish) in winter.

Cruiser sailing runs along the coast between Swansea, Burry Port and Tenby. Occasionally, wildlife trips travel along close to the coast in the summer season, although these now tend to concentrate on the western Gower.

The bathing water quality measured at the beaches is excellent apart from Limeslade which is good. Langland Bay beach is very heavily used and constricted in size for sunbathing, swimming, surfing and some body boarding and windsurfing. There is a public slipway. Caswell Bay beach is heavily used and constricted in size for sunbathing, and swimming and facing south west is used for some surfing and body boarding. Sea angling is carried out off all the beaches. Coaststeering at relatively low levels of intensity has been carried out to the east and west of Caswell Bay. Climbing is noted around the Mumbles.

The Wales Coast Path generally follows a sinuous route near the base of the cliffs dipping into the honeypots of Caswell Bay and Langland Bay. Due to the nearby settlements this is a well used part of the path.

Coastal settlement within this SCA itself is limited. However, residential development rising up the slopes on the southern edge of the Mumbles, at Limeslade, Langland, and Caswell Bay creates a suburban setting for the coastal edge in places. A few old cottages lie behind the beach at Pwlldu Bay.

Aesthetic, perceptual and experiential qualities

This area comprises an indented coast of moderately high sloping cliffs or steep slopes, enclosing a series of small sandy bays and coves interspersed with rocky foreshores. The scale along the cliff tops is medium-large, whilst in the bays the scale ranges from small to medium with strong enclosing landform and framed views. There are open and expansive views along the coast and out to sea, with distant views of the Exmoor coastline and on clear days, Lundy.

The Mumbles are key focal points at the eastern end of the SCA. They form an iconic feature at the mouth of Swansea Bay with the lighthouse on the outer of the two distinctively profiled tidal islets. To the west, the headlands define and enclose the bays. The rugged, rough, rocky coastal hillsides have rough textured and craggy rocks on the lower slopes, and rough or scrubby coastal heath above. Woodland has developed on the more sheltered east facing slopes. Whilst the beaches feel sheltered, especially where there are trees, the coast path and cliff tops are exposed in most winds. The Mixon Sands buoy bell is an often heard sound along the coast, and the Mumbles lighthouse foghorn is audible at times.

Most of the bays offer shallow sandy areas which are popular for bathing and informal water sports such as body boarding and surfing, and are very busy in sunny weather, with associated car parking issues and queuing vehicles. By contrast, Pwlldu Bay beach, the coast path and more remote hilltop areas are more tranquil, with walkers, dog walkers and horse riders, although they never feel particularly remote.

The sea is well used for recreational fishing and leisure cruising, being close to Swansea Bay and its marina, as well as Mumbles. The coast viewed from the sea usually displays settlement on the coast or hinterland, the coast path between settlements, as well as the Mumbles lighthouse, and so the area does not feel remote, certainly not to the east.

The main detractors from the landscape tend towards the eastern part of the coastline, and are the residential development and the golf course west of Langland, and housing close to the coast at the eastern edge of Langland Bay, which indicate the peri-urban nature of this coastline and its proximity to Swansea. A minor detractor is the fencing along the Coast Path at points which tends to suburbanise the otherwise semi-natural cliff slopes.

Cultural benefits and services							
The area contributes towards leisure and recreational services improving health and well-being through the various activities on the beaches and along the coast including swimming, walking and running, and sailing, and to natural heritage in various SSSIs covering cliffs, coastal heath and foreshores, and in the form of views out to sea and towards Exmoor.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
<p style="text-align: center;">Key Existing or potential change that may affect the selected special quality</p>							
Summary							
<ul style="list-style-type: none"> The area is sensitive to sea level rise and increasing severity of weather due to the built up nature of the seafronts in places and the intertidal features, such as honeycomb worm reefs. The SMP long-term objectives for Caswell Bay and Langland Bay are to hold the line through maintenance and upgrading of existing defences in order to protect tourism assets and properties. The objective for intervening rocky coasts including Bracelet Bay is of no active intervention, to allow the coast to evolve and retreat naturally. Pressure of visitors on Caswell Bay, Langland Bay and Bracelet Bay. Beach litter is a constant management issue affecting the quality of the beaches. Change in patterns of watersports, sometimes towards unauthorised motorised and noisy sports which affect the tranquillity of the beaches and inshore waters. Erosion of the Wales Coast Path between these honeypots. This may be moved inland at 							

points.

- Increase in the use of helicopters which are an added noise source and nuisance.
- Aquaculture, depending on the type proposed, could adversely affect seascape character.
- Use for tidal lagoons would be likely to have adverse effects on seascape character.
- Potential intensification, urbanisation and expansion of housing in bays and between settlements which can be visually intrusive and reduce tranquillity.

Key sensitivities

Factors contributing to sensitivity

The nature conservation value of SSSIs along the coast.

The open, exposed unspoilt character of the area offshore with a sense of wildness and views towards the Mumbles and Exmoor.

The intrinsic character of the enclosed sandy beaches and coves framed by unspoilt headlands with interesting reefs and features.

The intrinsic exposed and unspoilt character of the indented rocky coastline and headlands between settlements with coastal heath, grassland and woodland.

Cumulative impact of built development means some areas are reaching capacity.

Views towards Exmoor from the beaches.

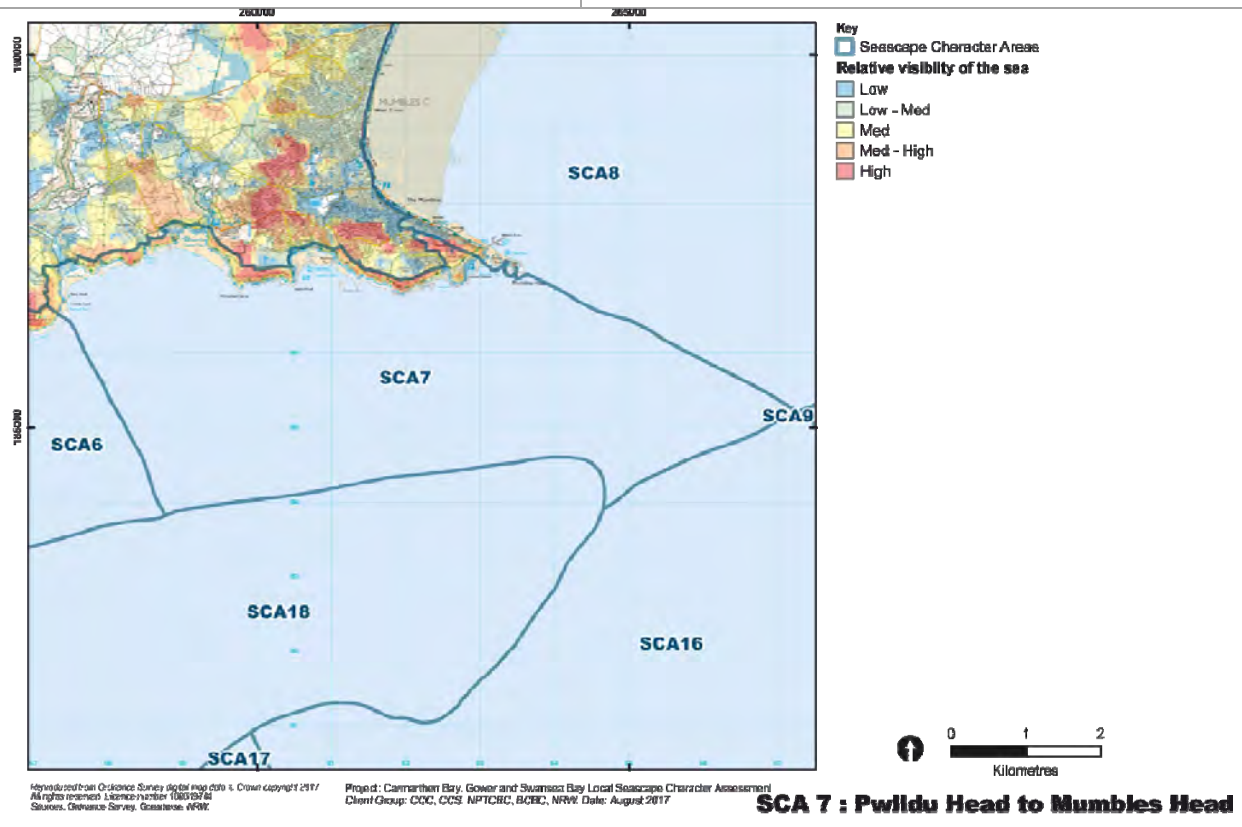
Users of the Wales Coast Path and leisure boaters from Swansea are sensitive receptors.

Factors detracting from sensitivity

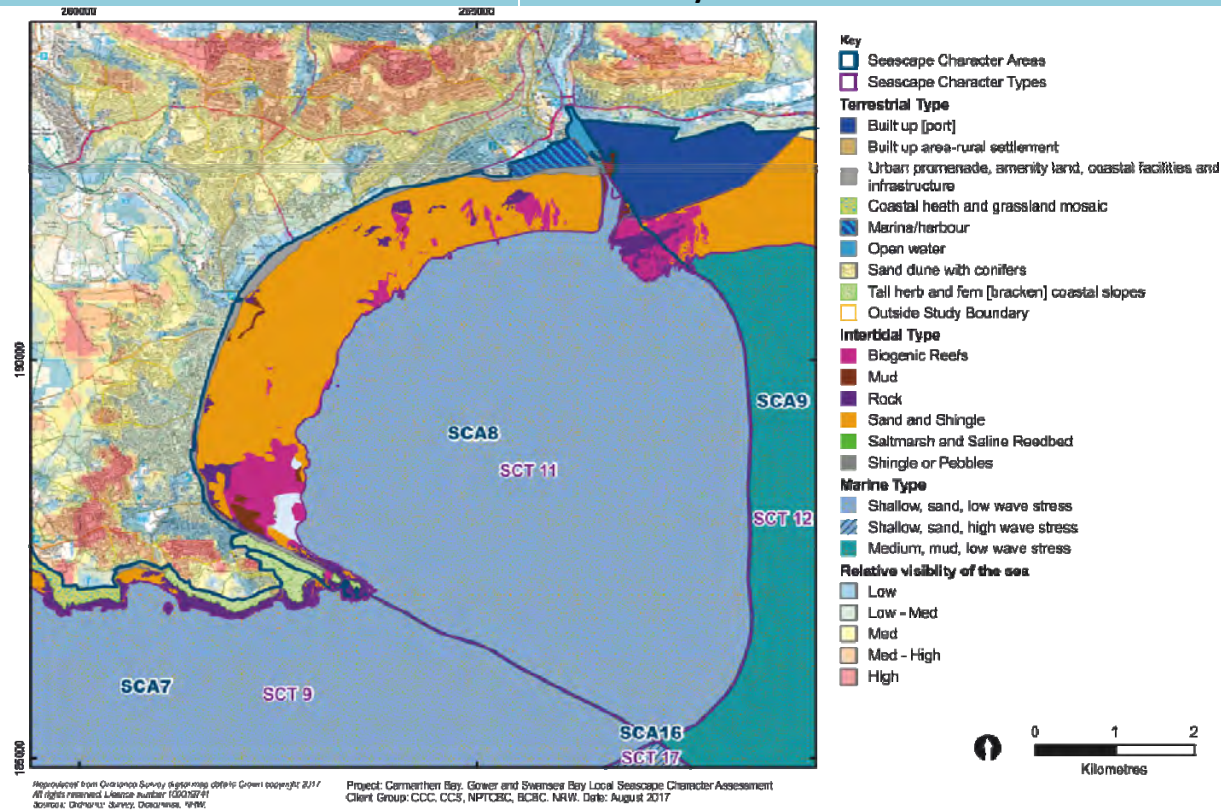
The built form of Langland Bay and Caswell Bay (although note cumulative impact contributes to sensitivity).

The presence of caravan sites.

Views to Port Talbot and Swansea to the east (from offshore).



Seascape Character Area No:	8
Seascape Character Area Name:	Swansea Bay- west



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Source: Ordnance Survey, Southampton, UK

Project: Carmarthen Bay, Gower and Swansea Bay Local Seascape Character Assessment
Client Group: CCC, CCS, NPTCCB, BCBC, NRW. Date: August 2017



The wide sweep of the beach at low tide at Swansea looking towards the distinctive profile of the Mumbles- the main focal point of the bay.



The promenade around the bay is very popular for keeping fit and enjoying the view and sea air.



View from the bay towards the mouth of the Tawe and the Swansea Marina development

Summary Description

The SCA forms the western part of a wide, sweeping shallow muddy sand bay enclosed by coastal hills and protected from south westerlies by Mumbles Head. The River Tawe enters the bay here and there is a marina and a dredged channel across the bay to serve this and the docks to the east. The bay is well used by commercial vessels and leisure and fishing day boats out of the marina, the impounded Tawe and the drying Mumbles Road moorings. Blackpill is an SSSI and important for over-wintering waders such as sanderlings. The varied mix of urban and suburban settlement and greenery on the hills and seafront are visually unified by the strong arc of the very wide sandy beach and the simple unspoilt surface of the bay. They are also unified by the cornice of very popular promenade, parkland and road along almost the entire seafront. The primary visual foci are the Mumbles and lighthouse off Mumbles Head with their distinctive profile, often seen in silhouette behind the lifeboat station. The Meridian Tower forms a tall man made vertical focal point in the centre of the bay. There are views across to Port Talbot and the coalfield plateau and, on clear days, to Exmoor.

Key characteristics

- The western part of a wide shallow bay protected from the south westerly winds by the limestone headland of Mumbles Head with a backcloth of hills.
- The River Tawe enters the bay to the east and its material combined with the transported coastal sediment form a very wide beach of sand with areas of mud, gravel and outcrops of Holocene silts, peat and bedrock.
- There are patches of submerged forest/biogenic reefs in the bay and peat deposits contain Bronze Age and Iron Age trackways.
- There is evidence of medieval fishtraps and generally rich marine archaeology.
- Blackpill SSSI is extensive, covering the western part of the beach, and is an Important Bird Area for over-wintering small waders.
- The bay was once exploited for oysters but the industry based at Mumbles and Oystermouth collapsed due to overfishing, poor water quality and disease.
- The edge of the bay and hinterland is covered by Swansea and suburbs which initially grew in the early 18C as an industrial centre, becoming the world centre for copper smelting, 'Copperopolis'. This was served by limestone and coal extracted along the edge of the bay and the Clyne valley respectively.
- The seafront once hosted the first known railway passenger service in the world- the Swansea & Mumbles Tramway which ran along a mineral railway.
- The northern coastal edge is now with a mix of civic, university, leisure, marina and housing uses all bound together by a hard edged cornice on the seafront with walking, cycling, parks and road behind the beach.
- To the south west, at Mumbles, the old fishing village asserts itself with the old village centre and the boat related seafront, slipways, piers and lifeboat stations.
- There is a drying anchorage at Mumbles Road is used for a mix of sailing, power leisure and rowing boats and small fishing boats.
- The very shallow waters of the bay deepen to the south east and there is a dredged channel to the mouth of the Tawe and Swansea Docks, used by commercial vessels.
- The Tawe is impounded by a barrage and locked with berths and moorings, in addition to Swansea marina.

- Mumbles Head with distinctively shaped pair of rocky islets and Trinity House operated lighthouse is a strong landmark and termination to the bay. Cherrystones race lies within 0.5km of the head.
- The bay is well used by a variety of leisure craft including sailing and powered cruisers, as well as for day boats and commercial vessels.
- The wide beach is moderately popular with nodes of intensive use dotted along the edge, whilst the promenade is very popular with runners, walkers and cyclists all year round with its ever changing vista across the bay.
- The bay sweeps in a smooth wide arc and is large scale but feels moderately enclosed by hills.
- The primary foci are the Mumbles and lighthouse off Mumbles Head with their distinctive profile, often seen in silhouette behind the lifeboat station. The Meridian Tower forms a tall man made vertical focal point in the centre of the bay.
- In the hinterland, the linear terraces of housing rising up to the top of Townhill and the University are prominent with important green spaces and trees in between.
- Views of the bay are possible from a variety of spaces inland including the Clyne Gardens.
- The sweeping curve of the wide sandy beach, highly visible at low tide, is the key feature. The variety of the hinterland land cover is unified by the wide sweeping beach and the simple unspoilt surface of the bay.
- Views are possible across to Port Talbot steelworks, which is seen against the backcloth of the coalfield plateau, and to Exmoor on clear days.
- The backcloth of hills are important to the character of the bay giving it a sense of enclosure and drama. Their mixed character is a balance of built form and ranges from the serried ranks of housing of Townhill to the green slopes of the Clyne Valley. Similarly at the detailed level, the buildings on the seafront contribute strongly to the varied character of the bay.
- The dark bay acts as a foil to the lit built form around it.

Natural influences

This is the western part of Swansea Bay from Mumbles Head to the estuary of the River Tawe at Swansea Docks. It is east to south east facing and cut into an east-west striking Upper Carboniferous succession dominated by mudstones and sandstones. This bedrock succession extends offshore across the Bay, with a thin Quaternary sediment cover. The resistant Carboniferous Limestone that forms the southern headland and the two tidal islets of Mumbles Head can be traced offshore across patches of rock seafloor exposed among the seafloor sediment. Muddy sand with patches of gravel forms the seafloor sediment in the inner bay, giving way offshore to sand and then to coarser, slightly gravelly sand.

The intertidal zone comprises of sand interspersed with areas of mud, gravel and outcrops of Holocene silts, peat and bedrock. Some littoral rock host hydroids, ephemeral seaweeds and sea snail in shallow pools. Elsewhere blue mussel and barnacles lie on very exposed eulittoral rock and Honeycomb worm reefs are found on sand-abraded eulittoral rock. Other biogenic reefs, with their largest areas to the south, host blue mussel beds on littoral mixed substrata. Submerged forests is exposed intermittently depending on sand movement. There are also a number of low amplitude sand bars. Above the upper beach and strand line to the north there are small drifts of sand dunes some limited marram grass.

The bay shelves gently (<1°) south eastwards, cut by the dredged navigation channel from the Docks, and is very shallow (mostly <10m) across the bay out to <20 m. Wave energy is low in the western bay, but by Mumbles Head the high tidal range up to 10m, tidal streams and exposure to the prevailing south westerly winds and waves result in high wave energy. Tidal current velocity in the Bay is relatively low (<0.5 m/sec). However, there is a 3.5 knots spring ebb past Mumbles Pier and 2.5 knots at springs a mile off Mumbles Head- the Cherrystones race.

Rocky limestone cliffs (<60 m) and foreshore at Mumbles are replaced by very wide sand beaches around the bay. Behind the beach, the hinterland is Quaternary glacial sediments, mostly sand and gravel. Sediment transport in the bay is affected by clockwise current gyres, which move sediment around within the bay, although with the effects of the main tidal currents from the Bristol Channel more transport is eastwards. Inflow from Afon Tawe brings silt sediment down towards the bay where the Tawe Barrage in Swansea results in sedimentation upstream. Regular dredging is needed

to maintain the water depth in the marina and in the shipping channel, and removes sediment from the bay. The bay is undergoing some erosion through coastal processes.

Swansea is built on the Upper Carboniferous succession, covered by glacial till. There are many west north west- east south east faults.

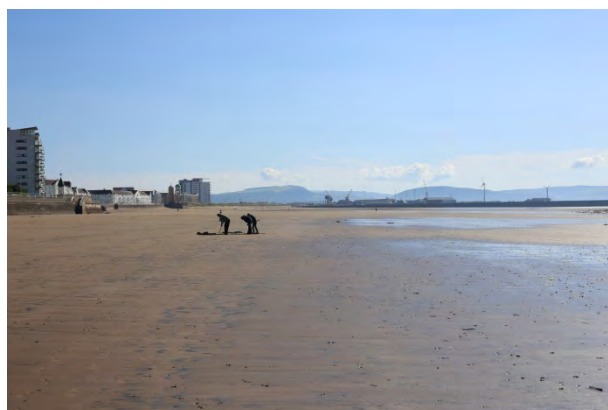
Blackpill SSSI is extensive, covering the entire western part of the beach including mudflats at the eastern and western ends that extend for over 1 km at low water. This site is designated for over-wintering small waders and supports internationally significant populations of ringed plover and sanderling and is also noted as an Important Bird Area.

The intertidal beach is interspersed with areas of mud, gravel and outcrops of Holocene silts, peat and bedrock. Some littoral rock host hydroids, ephemeral seaweeds and sea snails littorea in shallow pools. Elsewhere blue mussel and barnacles lie on very exposed eulittoral rock and Honeycomb worm reefs are found on sand-abraded eulittoral rock. Other biogenic reefs, with their largest areas to the south, host blue mussel beds on littoral mixed substrata. There are also a number of low amplitude sand bars. Above the upper beach and strand line to the north there are small drifts of sand dunes some limited marram grass.

A small area of sand-dunes is also present, although these have been partly converted to a golf course. There is a local nature reserve at Mumbles Hill.



The old and new life boat stations at Mumbles Pier form landmarks at the western end of the bay and are an indication of the use of the water over the years



Digging for bait is a popular pastime on the beach – looking towards the mouth of the Tawe and Swansea docks at the eastern end of the beach

Cultural influences

As the western part of Swansea Bay, this area formed part of the regular trade and traffic in an out of the mouth of the Tawe, above all the export of coal that has gone on since medieval times, Swansea was probably the third largest coal port in Britain after Newcastle and Sunderland by the 16th century, thriving on an export trade with France, but cross-channel trade with Devon and Cornwall was significant. Vessels would wait in the Roadstead east of Mumbles Head for the tide to enter the port.

The hinterland was the nearest source of coal to the copper mines of south-west England; since the smelting process requires three times as much fuel as ore, it made sense that this should take place on the Welsh shore, taking advantage of the good natural harbours. From a start in 1720, Swansea became the world-centre of the copper industry, making use of ore imported from Cornwall, Chile, Michigan and elsewhere. This also required locally-quarried limestone for use as a flux, much of it limestone quarried at various points between Mumbles and Swansea. It was a centre of ship-building and repair, in the mud berths off Black Pill. The Clyne Valley Country Park preserves bell-pits and shafts from coal-mining, and quarries for the limestone used as a flux in the area's metallurgical industries are evident throughout the area. The first known railway passenger service in the world was on the Swansea & Mumbles Tramway which ran along the seafront. This horse drawn service opened to passengers in 1804 but the line primarily served as a mineral railway. It was removed in the 1960s.

Extensive oyster beds are recorded in the bay with local fishermen making use of skiffs derived from the design of those on the Essex coast and the Thames to harvest them. The fishery even

attracted boats from East Anglia. 16 million oysters were landed in 1871, with the industry employing 600 people. Two years later productivity had halved through over-fishing, although water quality was also poor through the copper works and other activities. The practice persisted until the late 1920s when a Europe-wide disease wiped out the oysters. Inshore fishermen also made extensive use of fish traps here, first recorded in 1650, though earlier stone and wattle fish traps were superseded by stake nets in the late 19th century. There are traces of many small pills and loading points along this section of coast, as well as of the overland transport systems that served them, and the bay shelters many wrecks. Overall, there is rich marine archaeology in the bay.

The west coast paleolandscapes survey identified this area as once being high ground, with medium/high potential for survival of deposits. Where possible, deposits should be preserved in situ. A submerged forest in peat beds is located in the bay exposed at times above shifting sand and mud. This is a reminder of lower sea levels in Mesolithic times. The peat deposits contain Bronze Age and Iron Age trackways. There have been a large number of finds from all periods across the bay.

Oystermouth Castle is a medieval castle, developed over several phases from 1107, which lies to the west of the bay. It is set within trees above the coastal strip and so is not particularly visible from land. However, it overlooks the bay and is apparent from the water.

There are three boats which mark the maritime history of the area as floating exhibits in Swansea Marina. There is 'Olga', a Bristol Channel pilot cutter built in 1909, which took pilots out to larger vessels to guide them through the Bristol Channel. An oil-burning steam tug boat 'Canning' which was built in 1954 worked from Swansea Docks from 1966. She retired to become as part of the Swansea Museum in 1975. Lightship 91, Helwick, once marked West Helwick but was withdrawn in 1989. She was docked in Cardiff Bay for around 20 years before moving to Swansea.

There have been many wrecks in the bay over the centuries ranging from ocean going vessels to local oyster boats but few are now apparent. Remnants of the Strombus and Riverton are located just offshore of Mumbles /Oystermouth. The Strombus was built as a whale processing ship but was sunk by a German laid mine in 1940 en route to Antarctica. The Riverton was a steamship torpedoed out to sea by a U-boat in 1943 and was towed to Swansea Bay and beached. Part was refloated but the rest has been dispersed by Trinity House in the bay.

Features in the hinterland include the greater part of the urban spread of Swansea and its western suburbs, the university, the prison, the Welsh Industrial and Maritime Museum, parks and gardens and a whole landscape of leisure with its roots in the late 18th century. The town of Swansea began to acquire the trappings of gentility by this period, and became a significant holiday resort, vying with those of the Devon coast. The eastern end of the shoreline in particular has seen significant change since the medieval period, with the development of the South Dock (the marina) and of 20th century leisure facilities. Swansea Castle is now some distance away from the Tawe river.

Cultural associations include the area's Viking connections, and the tradition that the town takes its English name from Sweyn Forkbeard, King of England and Denmark. The area is associated with the earliest heavy industrialisation in Wales, with the early history of holidaymaking and sea-bathing in the area; and with the prose and verse of Dylan Thomas who was born and lived in Uplands, and where he wrote his early poems. There was a lively local tradition of marine art (or 'pierhead art'), catering for mariners sailing in and out of Swansea.

The poet, Dylan Thomas, was born in Uplands in Swansea and has a statue and centre in the Maritime quarter. His work was inspired by places in and around Swansea Bay. He used the sea as a metaphor in an early poem, 'Light breaks where no sun shines'

*'Light breaks where no sun shines;
Where no sea runs, the waters of the heart
Push in their tides;....'*

The bay has also inspired other writers and poets.

In *A Walk by the Sea*, by Francis Kilvert (1840-1879) wrote:

'The lurid copper smoke hung in a dense cloud over Swansea, and the great fleet of oyster boats

under the cliff was heaving in the greenest sea I ever saw. We had luncheon upon the cliffs overlooking the white lighthouse tower upon the most seaward of the Mumbles. ... A steam tug shot out of Swansea Harbour to meet a heavily laden schooner under full press of canvas in the bay, and towed her into the port, and the great fleet of oyster boats which had been out dredging was coming in round the lighthouse point with every shade of white and amber sails gay in the afternoon sun as they ran each other into their moorings under the shelter of the great harbour cliff.....Among the sighing of the gorse came upon a lift of the wind a faint and solemn tolling of a bell from seaward. It was the tolling of the buoy moored off the Mumbles, a solemn awful sound...for the souls of those who had gone down at sea..'

The current Swansea-based writer and actor Peter Read in 'On Swansea Bay', wrote:
*'There is the whiff of death
 on the breadth of your surf,
 the ebb and flow of smashed dreams.'*

Painters have recorded the bay and Mumbles Head. Examples from the 19C include the following.

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† *'The Mumbles light-house, in Swansea Bay',
 William Daniell (between 1815-1825)*



The Mumbles, Swansea Bay, Samuel Phillips Jackson (1860)

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Ships in Swansea Bay, James Harris Senior (1810-1887)

In relation to navigation, this part of the bay is defined by very shallow waters drying to a very wide beach of sand and sandy mud to the north and west, and deepening to the south east. There is a drying anchorage at Mumbles Road, protected from the westerlies and south westerlies by Mumbles Head. The Cherrystones race lies within 0.5km of the head. The Trinity House operated

lighthouse on Mumbles Head is a strong landmark marking the western extent of Swansea Bay. It lies 35m above mean high water with a 15NM range. A dredged channel runs north north east to the mouth of the Tawe and Swansea Docks, through the Green Grounds. This is marked to the south by a cardinal buoy and by red and green lateral buoys northwards. Recreational boats are advised to keep to the west of the channel to avoid commercial ships.

A new all weather lifeboat station at the end of Mumbles pier replaced the previous in 2014 and the two stand side by side. The inshore lifeboat station and original lifeboat house lie onshore. It is the busiest of the 30 stations in Wales, with a total of 98 launches of the Tamar all-weather lifeboat and inshore lifeboat combined. This is compared with 60 launches in 2014. It also rescued more people than anywhere else in Wales with 122 people rescued in 2015, compared with 82 in 2014.

The entrance to Swansea port and harbour is marked by signal lights on the breakwaters. The commercial docks (Kings Dock and Queens Dock, both in SCA 9) are accessed to the east of the channel and can handle vessels upto 30,000 dwt. The docks handle 600,000 tonnes annually (ABP website, 2016) including coal, aggregates, specialist project cargoes such as wind turbines, wood pulp, recycled products and other industrial uses. There are also repairing jetties and dry docks although the extent of use of these is unknown. The SA1 development to the north is now replacing former dock related use to offices and housing and other uses.

To the north of the port access, there is also a ro-ro terminal and ferry port although the Swansea-Cork ferry is currently not operational. The River Tawe is impounded upstream with a barrage to maintain water levels. This is locked to allow access for smaller craft. There are moorings for the small fishing fleet and other commercial boats, as well as private recreational berths in the impounded water. Swansea marina is accessed by a further lock. This has 340 berths with capacity for 50 visitors.

There is mussel cultivation and dredging (and mussel seed dredging) in the middle of the SCA although this fishing is not always active. Pots are also set for prawns. A company is aiming to restore the native oyster beds off Mumbles and some young oysters are apparently now evident. Set beach nets, such as for bass, have been used within the area. Commercial rod and line fishing is practised. Recreational rod and line fishing is prevalent throughout. Species include bass and tope in the summer and rays, conger, whiting (and dogfish) in winter.

A dumping ground/spoil ground is licensed in the middle of the bay, split between SCAs 8 and 9. This is used for the material dredged from the Swansea and Port Talbot port channels.

Cruiser sailing runs across the bay from Swansea marina mainly towards the Mumbles and around the Gower peninsula coast. There are approx. 20 swinging moorings off Mumbles. There is a yacht club with boat storage facilities & moorings. There is a slipway at Knab Rock that allows the launching of dayboats. Yacht & motor cruising are popular from this side of the bay. The bay is used for windsurfing, kite surfing and wake boarding. Rowing is carried out between the Mumbles and the Civic Centre, in the more sheltered part of the bay. Sea angling is popular off the shore at Mumbles.

There is a large marina (approx. 550 berths) in the centre of the city's waterfront with many retail & catering units surrounding it. The marina is also a hub for much general marine industry activity - craning, storage, boat maintenance, boat sales, etc. These slipways & craning allows access to the water. Boat trips out around the bay also operate from the marina. The National Waterfront Museum of Wales is located by the marina. Sail & motor cruising, as well as dayboats & dinghy sailing, are all popular activities in this area. Several sailing & other water-sports schools are based around the marina. Commercial fishing boats also operate from here. Across the River Tawe, there is a yacht club with its own pontoon moorings (approx. 200 berths) which also provides facilities for boat storage. A dive school also operates from here.

Swansea Beach is moderately popular, with people spread out over a wide frontage close to the promenade. The bathing water quality measured at the beach is good. The Wales Coast Path runs along the back of the beach along almost the entire length of the western bay. This allows a gradually changing vista across the sweep of the Bay, with the focus changing from Mumbles Head to the west to the maritime quarter and docks to the east, with Port Talbot steelworks almost always visible in the distance. The path is very busy at all times of year with a mix of walkers,

runners and cyclists of all ages.

The promenade that links the Mumbles with Swansea is a highly popular venue for walking, running and cycling. There is a Watersports Centre located approximately halfway along that is mainly a catering facility although water-sports providers do operate from here. Further east into Swansea there is a public slipway allowing the launch of dayboats.

Coastal settlement in the hinterland of this SCA changes from the highly urban and high densities of Swansea to the east to become more suburban to the west until the former fishing settlement of Mumbles is reached.

Aesthetic, perceptual and experiential qualities

This area forms the western part of Swansea Bay, which sweeps in a smooth wide arc from the Mumbles to the West round to Margam steelworks to the East. The bay is large scale but feels moderately enclosed by rising hills reaching over 100m AOD with an undulating skyline to the north and west. Views out to sea are enclosed on clear days by the coast of Exmoor, which lies in the distance. The primary foci are the Mumbles and lighthouse off Mumbles Head with their distinctive profile, often seen in silhouette behind the lifeboat station. The Meridian Tower forms a tall man made vertical focal point in the centre of the bay standing among the noticeable Swansea Marina and waterfront development, close to the Tawe. The mix of urban form on the hillsides and seafront are pronounced and regimented in places, such as Townhill, but are interspersed with trees and green areas which soften the bay, especially to the west. The sweeping curve of the wide sandy beach, highly visible at low tide, is the key feature. The variety of the hinterland land cover is unified by the wide sweeping beach and the simple unspoilt surface of the bay. Views are possible across to Port Talbot steelworks, which is seen against the backcloth of the coalfield plateau, and which is particularly noticeable when large plumes of steam are released periodically.

This part of the bay is protected from the prevailing south westerlies by Mumbles Head, especially around Mumbles itself. The surface of the water is therefore often relatively calm inshore, except in easterly winds, although the gently sloping beach leaves very wide areas of sand and muddy sand, with some low reefs and rocks visible at low tide. This relatively sheltered area, focussed on The Knab, has numerous small boats moored, lying stranded at low tide. Larger boats including fishing trawlers are moored in the Tawe or Swansea Marina and these exit with some frequency through the Tawe locks to cross the bay.

The coastal edge is manmade and hard, defined by a cornice with parkland, promenade and cycle track which runs the majority of the seafront and allows leisurely enjoyment of the bay with views changing from out to sea across the Bristol Channel to views back to Swansea from the west. Along the promenade there are intermittent cafes and beach access and here there is more intense use of the sands including volleyball. Elsewhere the beach is animated by occasional walkers, sand sailors or lugworm diggers. There are small patches of dunes which soften the coastal edge and act as locations to sit above the high water mark. Overall the water, beach and promenade are well used but there is still sufficient space to enjoy the bay and feel a sense of escape from the city streets.

In the hinterland, the linear terraces of housing rising up to the top of Townhill and the University are prominent with important green spaces and trees in between. Views of the bay are also possible from a variety of spaces inland including the Clyne Gardens. Kilvey Hill to the east is an important undeveloped hill with semi-natural vegetation behind the docklands, with commanding views.

The Mumbles lighthouse foghorn is audible at times. At night the dark bay acts as a foil to the lights of Swansea, Oystermouth and Mumbles.



Mumbles Head at low tide seen in the wide angle context of Swansea Bay to the left and the south Gower Coast to the right

Cultural benefits and services

The area contributes towards leisure and recreational services improving health and well-being through the various activities on Swansea beach and along the seafront including walking, running and cycling, and sailing and rowing from the marina and Tawe barrage and Mumbles, and to natural heritage in Blackpill SSSI, the foreshore with its biogenic reefs, and in the form of views across Swansea Bay towards the Mumbles and Exmoor.

Forces for change

Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality	■	■		■	■		
Views to and from the sea/land				■	■		
Diversity of seascape/landscape	■			■			
Sense of place	■			■	■		
Remoteness, tranquillity and wildness				■			
Distinctive geology /coastal processes	■	■		■			
Rich habitats and biodiversity	■	■		■			
Rich archaeology and built heritage	■	■		■	■		
Strong cultural associations	■			■			
Access to the coast or sea	■						
Valued beaches	■			■			
Key	■	Existing or potential change that may affect the selected special quality					

Summary

- The area is sensitive to sea level rise and increasing severity of weather due to the built up nature of the seafront and hinterland, the exposure of dock infrastructure to the north with associated dredged channel, and the intertidal features, such as biogenic reefs/submerged forests, and the effect on watercourses such as Blackpill which will be raised with higher potential for flooding.
- The SMP long-term objectives are to hold the line through maintenance and upgrading of existing defences in order to protect tourism assets and properties. These include managing the risk of coastal erosion and flooding to the promenade, A4067 and B4433 highways, and development inshore. The continued dredging of the navigation channel to allow access to Swansea Docks, the Tawe barrage and marina is recommended.
- The Swansea Bay Tidal Lagoon has been granted a Development Consent Order but other consents are under determination at present. This development is very large scale protruding 3.5km into Swansea Bay, and would significantly change the character of Swansea Bay if implemented. The coastal processes would be changed due to the revised coastline and the flows of water from the lagoon. There is likely to be an additional accumulation of sand or other material on the beaches which could adversely affect the habitats and features of the beach as well as cause management problems for the roads and promenade adjacent. The impounded water would be at a different level to the water outside for the majority of time. The lagoon would split the bay into three components, and would remove the unified sweeping character created by the wide beaches along the shore. Views from the coast would be interrupted by the high rock armour sea walls and the offshore visitor centre and turbine housing will be noticeable. The lagoon is intended to be used by a number of sporting activities and mariculture so this part of the bay will become busier and people would have access to sea wall reaching out into the bay, giving a new perspective on the seascape.
- Beach litter is a constant management issue affecting the quality of the beach.
- The redevelopment of Swansea Civic Centre may have a significant effect on the character of this part of the bay.
- Tall development proposed in Mumbles could change the relationship between the built form and cliffs, changing the character.
- Potential intensification of development along the corniche/promenade or hinterland could adversely affect character.
- The restoration of the oyster fishery at Mumbles is a potentially significant positive initiative commercially, in renewing a habitat and in reviving the cultural tradition in the bay.

Key sensitivities

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The nature conservation value of Blackpill SSSI.</p> <p>The open, exposed unspoilt character of the area offshore with views towards the Mumbles, Port Talbot and Exmoor.</p> <p>The intrinsic character of the wide sandy beach with its interesting reefs and features.</p> <p>The sense of wildness and exposure of the area off Mumbles Head.</p> <p>The coherent and continuous promenade and associated green spaces and focal points eg</p>	<p>The built form of Swansea in parts.</p> <p>The noise and movement of traffic along the corniche.</p> <p>Views of the Swansea docks.</p> <p>Use by shipping approaching and leaving Swansea docks.</p> <p>Simple seascape pattern.</p>

Knab Rock facilities.

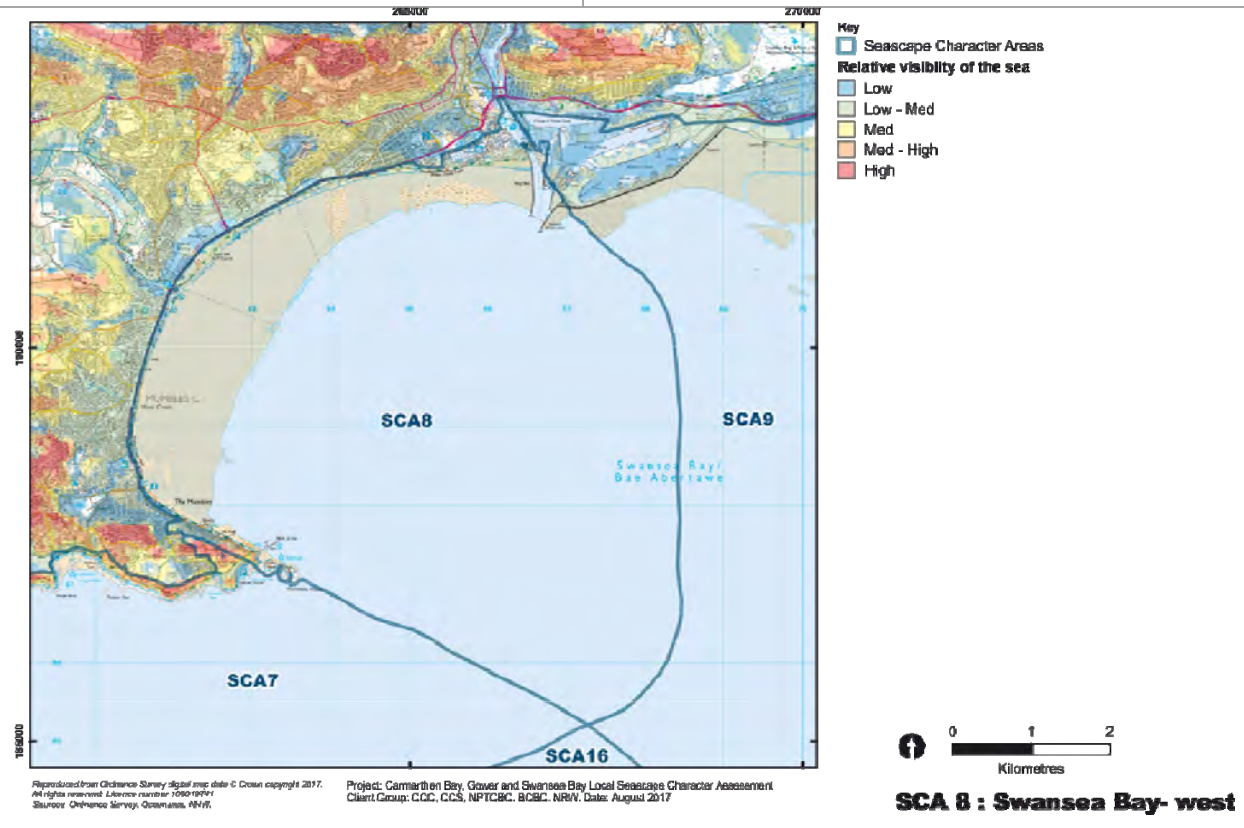
The strong natural backcloth of Mumbles Hill and associated rock faces, and the green areas such as Clyne Gardens and valley.

Views towards Swansea, Mumbles Head and Port Talbot from the promenade and beach.

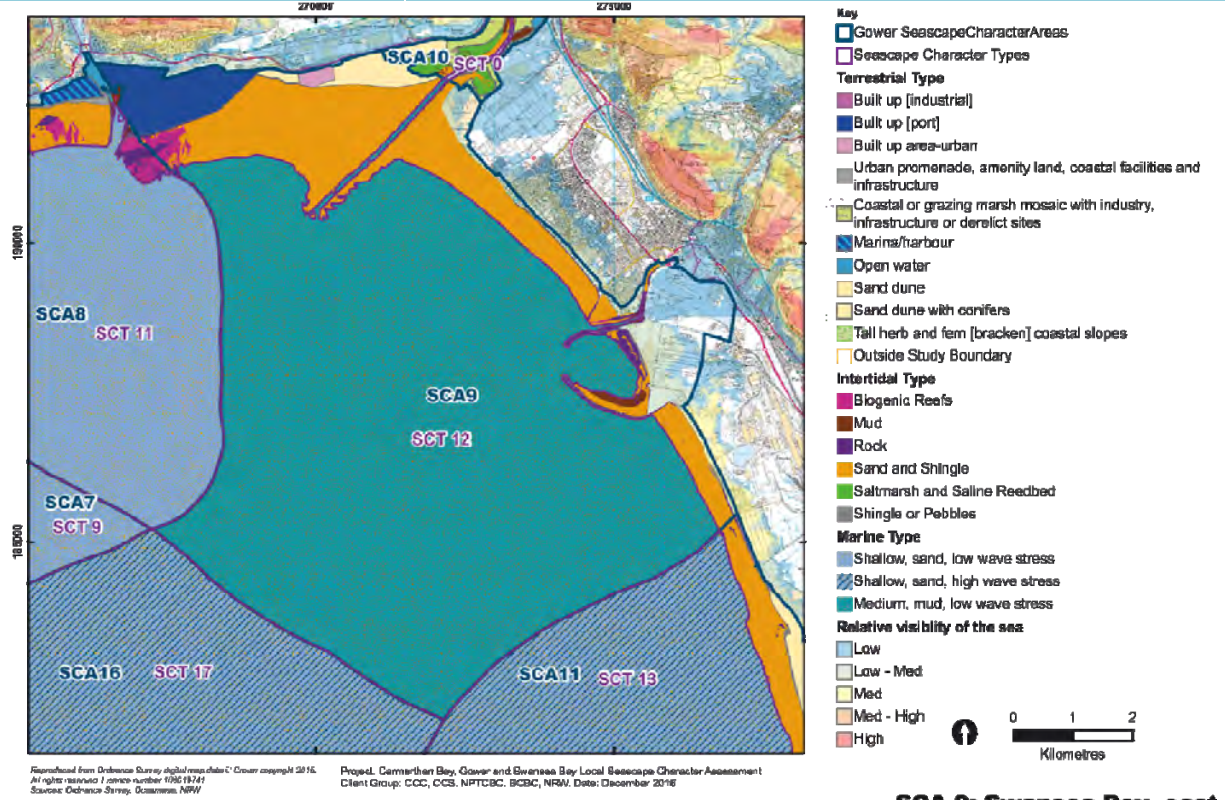
The focal point of the Meridian tower development and the serried ranks of houses on Townhill are distinctive built features.

The setting of Oystermouth Castle and the Guildhall.

Users of the promenade/corniche, the Wales Coast Path and leisure boaters from the marina, Tawe and Mumbles are sensitive receptors.



Seascape Character Area No:	9
Seascape Character Area Name:	Swansea Bay- east



The popular beach and seafront at Aberafan looking towards Kilvey Hill across the bay



The huge cranes at Port Talbot docks



The wild stretch of beach at mouth of the Neath estuary

Summary Description

The SCA forms the eastern part of a wide, sweeping shallow muddy sand bay with wide beaches exposed to the prevailing south westerly winds. The River Neath and River Afan enter the bay here. There are dunes either side of the Neath and Crymlyn Burrows is an SSSI. There is a dredged channel with training walls to the Neath and a deep dredged channel serving the tidal harbour at Port Talbot steelworks. The bay is used by commercial vessels, mainly to Port Talbot, and to an extent by leisure boats but less intensively than to the west. The enclosing hills in the hinterland are relatively unspoilt and form an important backcloth to the bay. The primary visual foci are the huge steelworks structures and cranes. Key views are from the popular Aberafan seafront and beach across the bay to the Mumbles.

Key characteristics

- The eastern part of a wide shallow bay exposed to the prevailing south westerly winds.
- The Rivers Neath and Afan enter the bay and their material combined with the transported coastal sediment form sand banks and wide beaches of muddy sand giving way to sandy mud further out.
- The beaches are backed by sand dunes around the Neath estuary and Crymlyn Burrows is an SSSI. The estuary in Baglan Bay is used by small over-wintering waders.
- The coast encompasses an important past and present industrial landscape ranging from Swansea East Docks, oil storage and refining, and Port Talbot steelworks and docks. Historic marine use has included the export of coal, the import of crude oil from the Middle East as well as coking coal, minerals and ores.
- Port Talbot docks currently imports 2.5 million tonnes of coal and 5.5 million tonnes of iron ore per annum for the steelworks as well as handling steel products, aggregates and other industrial uses.
- Swansea Docks currently handle coal, aggregates, specialist project cargoes such as wind turbines, wood pulp, recycled products and other industrial uses.
- The oil storage and refining uses have been replaced by the new Swansea University bay campus to the north and by a power station, paper works and other uses to the east.
- Aberafan beach and seafront were once very popular as a bucket and spade resort but are now popular for day trips/short visits having undergone significant environmental improvements.
- There is a deep dredged channel to Port Talbot tidal harbour serving the steelworks which is one of the few in the UK that can handle vessels up to 170,000 dwt.
- There is a dredged channel to the River Neath which has noticeable training walls on both sides which is used by a few commercial and leisure vessels.
- The tidal River Afan has a dredged channel from the bay and offers only tidal moorings for small craft and access to the adjoining old docks.
- Overall, while this side of the Bay is used commercially with craft creating some visual interest, it is used less for leisure than the western side although there is some recreational fishing.
- The Wales Coast Path is popular on the Neath estuary and to south towards Aberafan.
- Visually, the area forms part of the smooth wide arc of Swansea Bay and feels large-scale, although partly enclosed by the relatively unspoilt hill backcloth of Kilvey Hill and the coalfield plateau scarp slopes including Mynydd Dinas and Mynydd Brombil, although the latter now has a windfarm on it.

- The primary foci are the huge industrial structures of the steelworks, reinforced by the wind turbines and the cranes in the tidal harbour. These contrast with the flat, suburban character of the Sandfields estate, behind Aberafan beach.
- The wide sandy beach is the key feature. The variety of the hinterland land cover is unified by the wide sweeping beach and the simple unspoilt surface of the bay.
- The dunes either side of the estuary, along with the beaches, offer some sense of escape from the busy hinterland.
- Views are primarily enjoyed from the Wales Coast Path and Aberafan beach which looks across the bay to Mumbles Head.

Natural influences

The west-facing side of Swansea Bay between the Docks and Margam includes the Neath (Afon Nedd) estuary and also the River Afan (Afon Afan) estuary at Port Talbot. The underlying bedrock is Upper Carboniferous, with the strike of rocks swinging round from east-west to north east- south west and following the coast before turning back east-west across the Vale. Offshore, the sea bedrock geology is mostly mudstones and sandstones of the Upper Carboniferous with the more resistant Carboniferous Limestone crossing the bay between Mumbles and Kenfig and partially exposed as rocky seafloor. The seafloor sediment is muddy sand around the coast, fining out in the bay to sandy mud. Around the Neath estuary in Baglan Bay there are sand bars.

The bay slopes gently (<1°) south to south west to a depth <15m, crossed by the dredged shipping channel from Port Talbot harbour and a channel from the mouth of the Neath estuary. The west facing bay is exposed to the prevailing winds and waves, with a high tidal range (<10 m), and high wave energy. Tidal current velocity in the bay is relatively low (<0.5 m/sec).

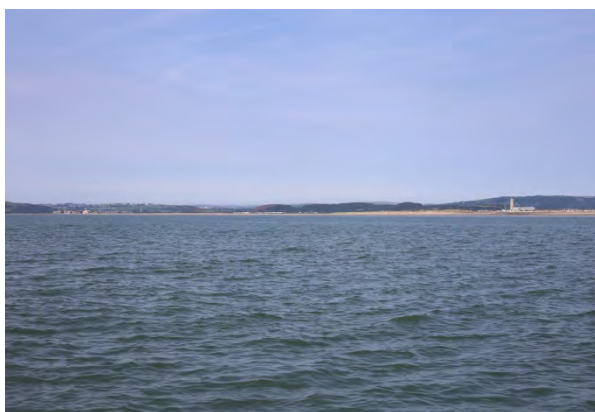
East of Swansea Docks, the muddy river channel and dredged channel of Baglan Bay at the mouth of the Neath estuary (SCA10) is flanked by a wide area of sand bars. The Afan estuary north of the Port Talbot harbour is cut by a dredged channel. Between the river valleys and south of Port Talbot the sand beaches (Aberafan Sands and Margam Sands) are backed by dunes.

There is inflow of mud and silt from the River Neath, and eastward sand transport in suspension and by traction in the Swansea Bay gyre and tidal currents, as well as blown sand, make the Neath estuary an area of coastal accretion. Storm events transport sediment onshore eastwards from outer Swansea Bay into areas of longshore current and wave processes, leading to deposition around Port Talbot harbour and a requirement for dredging.

. The Neath estuary is used by part of a population of small waders overwintering in Swansea Bay and salmon and sewin migrate up this river and the Afan. Harbour Porpoise, the smallest UK marine mammal, is evident in the bay, particularly around Port Talbot Docks where it forages and feeds in the deep dredged channel.

The foreshore is predominantly unbroken littoral sand and muddy sand. The beach at Aberafan and to the south is generally fine sand. To the west, close to the mouth of the River Tawe, there is high energy littoral rock with acorn barnacle and sea snails species and honeycomb worm reefs on sand-abraded eulittoral rock. There is some supralittoral rock and sand in the harbour at Port Talbot. Above the upper beach and strand line to the north and north east there are established sand dunes with marram grass. Crymlyn Burrows is an SSSI. Parallel sand dune ridges at right angles to the River Neath are interspersed with tongues of saltmarsh. There are wet dune slacks and carr woodland in places.

Onshore, the Upper Carboniferous bedrock is widely covered by glacial till on higher ground. On lower ground, Quaternary outwash sediments cover the bedrock. The coastal strip is largely developed on artificial ground. The grassland in the steelworks is salt tolerant coastal grassland.



View from the bay towards the Neath/Nedd estuary



View from the bay towards Aberafan beach and the backcloth of unspoilt Mynydd Dinas

Cultural influences

This area, and its hinterland, extending from the mouth of the Tawe to Margam, encompasses the important past and present industrial landscapes of Swansea East Docks (Port Tennant), the historic colliery workings of Llansamlet parish, the Llandarcy oil refinery, and the Port Talbot steelworks. Historic marine use has included the export of coal, and the import of crude oil from the Middle East to Llandarcy as well as of coking coal, minerals and ores to Port Talbot.

Wrecks here include the Norwegian *Stalheim* and the Dutch *Madjoe*, one carrying anthracite and the other coal, lost in 1940 and 1941 respectively as a consequence of German-laid mines in Swansea Bay. From Neath to the south, many vessels have been blown ashore by the gales and wrecked here.

The west coast paleolandscapes survey identified this area as once being high ground, with medium/high potential for survival of deposits. Where possible, deposits should be preserved in situ. The south-western part of the area contains the Outer Green Grounds oyster-beds, historically fished by the Mumbles fleet.

The hinterland is dominated to the east by Margam Mountain, a multi-period landscape with Bronze Age, Iron Age Roman and medieval archaeology, as well as a Second World War radar site. The Cistercian abbey at Margam was the richest monastic house in Wales, founded in 1147, and acquired by Sir Rice Mansel after the Dissolution. These form part of Margam Mountain Landscape of Special Historic Interest.

The borough of Aberafan was incorporated in 1283, though it has been entirely subsumed in the growth of Port Talbot. The earliest focus may have been in the area of the castle and church and where the main coast road crosses the Afan, although reports of the town being overcome by sea and sand in 1491-2 suggest an earlier location to seaward. Aberafan grew as the port and settlement for the Cwmavan works, some way inland, from the 1820s, and was renamed 'Port Talbot' after the local landowning family. The seascape is now dominated to the east by the steel works and by development around Port Talbot. The steelworks represent an intrusive but powerful landscape in complete contrast to earlier patterns of settlement. Breakwaters enclose a steel-piled jetty in the new tidal harbour built from 1966 to 1970. The old docks at Port Talbot were brought back into service in 1988; these accommodate smaller vessels.

Aberafan beach and seafront were once very popular between the 1940s and 1960s as a bucket and spade resort serving the miners and other workers of the South Wales valleys. This use faded with the decline of the valleys and the advent of continental holidays.

Culturally, the coastal areas and the hinterland have seen considerable change over the last three centuries, with rapid industrialisation followed by significant de-industrialisation. Tellingly, the former 65 acre former BP transit site on the coast and Llandarcy oil refinery in the hinterland are in re-use as Swansea University bay campus (opened 2016) and as a business park/residential development respectively.

Abertawe (Swansea) and Llandarcy were combined to as 'Aberdarcy', the location of Kingsley Amis' novel *That Uncertain Feeling* (1955), made into a film starring Peter Sellers *Only Two Can Play*

(1962). Ramsay Macdonald was MP for Aberavon (sic), a constituency now represented by Stephen Kinnock.

The Port Talbot area has produced a remarkable crop of famous actors including Richard Burton, Anthony Hopkins and Michael Sheen.

In April 2011, actor Michael Sheen led a 72-hour National Theatre Wales production of a modern retelling of The Passion. The play began at 0530 on Good Friday with a seafront scene, inspired by John the Baptist's baptism of Jesus, which was watched by hundreds who had heard about it by word of mouth. By the time the first main part of the play was performed on Aberafan Beach at 1500, organisers estimated up to 6,000 people had gathered to watch.

In terms of navigation, the approach to the River Neath is marked by outer entrance buoys. There is a dredged channel to the mouth of the River Neath with a training wall on the south east side and a slag training bank to the north west. These are marked by lit posts.

The channel to Port Talbot docks is also dredged and marked by cardinal marks in the bay and two other buoys. There are guiding lights onshore as well as breakwater lights. The harbour is tidal and is one of a few in the UK that can handle vessels upto 170,000 dwt.

Port Talbot docks currently imports 2.5 million tonnes of coal and 5.5 million tonnes of iron ore per annum for the steelworks as well as handling steel products, aggregates and other industrial uses.

Swansea Docks, served by a dredged channel in SCA 8 to the west, currently handle coal, aggregates, specialist project cargoes such as wind turbines, wood pulp, recycled products and other industrial uses.

There is a dredged channel to the mouth of the River Afan. Whilst the docks are not open to yachts, the river offers tidal moorings upto 0.8km inshore although the narrow estuary should be avoided in fresh onshore winds. The entrance is north of the docks and boats enter avoiding the wreck marked by the Stalheim cardinal mark and the bar which is too shallow less than two hours around low tide. There is a small yacht club on the eastern bank with a slip. There are also a couple of small boatyards providing approx. 20 swinging & pile moorings as well as boat storage.

Potting for lobster and crab has been carried out around the Port Talbot docks entrance. Pots are also set for prawns. Set beach nets, such as for bass, have also been used within the area, mainly to the south west. Fyke nets are set for eels. Commercial and occasional recreational rod and line are located with whelk potting to the south west out in the bay. Beach seining is carried out to the east and hand gathering of razor clams has been recorded. There are ragworm and lugworm beds used for bait digging.

A dumping ground/spoil ground is licensed in the middle of the bay, split between SCAs 8 and 9. This is used to dispose of the dredged material from the channel to Port Talbot docks.

Cruiser sailing runs across the bay from Monkstone marina and the River Afan mainly towards the Mumbles and around Gower coast, but also south and east. This side of the bay is slightly less popular with recreational sailors than the west but there are still occasional fishermen and users off Aberafan beach. This beach is heavily used in day trips, mainly for sunbathing and swimming and some surfing and the bathing water quality is good. It is complemented by a landscaped seafront which offers some degree of shelter.

The Wales Coast Path loses contact with the coast on the north east part of Swansea Bay, following the Tennant Canal. From Baglan Burrows south it runs along the narrow dunes edge and then Aberavon seafront, making the most of the sweeping views across the bay towards the Mumbles and Swansea. It then follows the River Afan inland to bypass the intervening steelworks. There is an alternative braided route which runs along the top and base of the coalfield plateau hill backcloth. This allows panoramic views across the bay with Port Talbot, steel works and busy M4 in the foreground.

The eastern side of the Neath/Nedd estuary is popular for walkers, kite surfing and unauthorised motorcycle scrambling.

The settlement pattern in the hinterland to the north comprises of the docks and new university campus backed by commercial uses. To the east, the large housing estate of Sandfields lies on former dunes between the docks and huge steelworks complex to the south and a commercial area of power station, paper works and other uses on the former Baglan BP chemicals site.

Aesthetic, perceptual and experiential qualities

This area forms the eastern part of Swansea Bay, which sweeps in a smooth wide arc from the Mumbles to the West round to Margam steelworks to the East, broken only by the Nedd estuary. The bay is large scale but feels partly enclosed by rising hills reaching over 100m AOD with an undulating skyline peaking to the north in Kilvey Hill and to the east with the coalfield plateau beyond the coastal plain at Mynydd Dinas and Mynydd Brombil.

The main visual foci are the huge industrial structures of the Port Talbot steelworks behind the Port Talbot docks with their huge cranes which dominate the seafront. The works are a dynamic spectacle issuing large plumes of steam periodically. These contrast with the smaller scale and clean design of the modern paper mill to the north and the monotonous, flat suburban character of the Sandfields estate which backs onto Aberafan Beach and separates the two industrial areas. The northern edge of the bay has been transformed in recent years with an oil storage depot converted into the Swansea University bay campus. The large out of town campus with its classically proportioned Great Hall is noticeable. The still operational Swansea Docks to the west are protected by a reinforced seawall with wind turbines, warehouses and cranes behind.

The wide sandy beach, highly visible at low tide, is the key feature. It is backed by low dunes both sides of the Nedd estuary. The muddy sand at the estuary mouth is extensive either side of the dredged channel defined by its walls. The variety of the hinterland land cover is unified by the beach and the simple unspoilt surface of the bay. Views across the bay are primarily from Aberafan Beach which looks across to the Mumbles Head but the distinctive profile of the Mumbles and lighthouse are not apparent from this angle.

This part of the bay is exposed to the prevailing south westerlies so the surface of the water can be rough and moorings for small craft are limited to the course of the Afan. The large ore and other carriers dock in the deepwater steelworks docks.

From both the coast and the water there is a sense of enclosure from the surrounding high ground, in particular Kilvey Hill to the north and Mynydd Dinas and adjacent hills to the east. The steel works are prominent in views, now visually reinforced by turbines on Mynydd Brombil and solar development on Mynydd Emroch which blur the previously clear limits of large scale commercial development on the coastal plain.

Most people access the sea from Aberafan Beach with its promenade, coastal gardens and cafes. The beach is flat and unbroken and is very well used particularly in the summer due to easy parking behind. Elsewhere the beaches and dunes are used by occasional walkers and have an air of slight remoteness, albeit in full view of old and new industrial infrastructure and often within earshot of the elevated M4. Nevertheless, providing one looks out to sea or across the bay, the coastal edge and water provide feel a sense of escape from the nearby industry and streets.

At night the lights of the steel works highlighting the plumes of steam, the town, and Swansea and the Mumbles in the distance define and act as a foil to the dark bay.

Cultural benefits and services

The area contributes towards leisure and recreational services improving health and well-being through the various activities on Aberafan beach and seafront and walking along the coast, and to natural heritage in Crymlyn Burrows SSSI, other dunes, wading bird populations in the estuary and porpoises off Port Talbot docks and in the form of the beaches and views across Swansea Bay towards Gower.

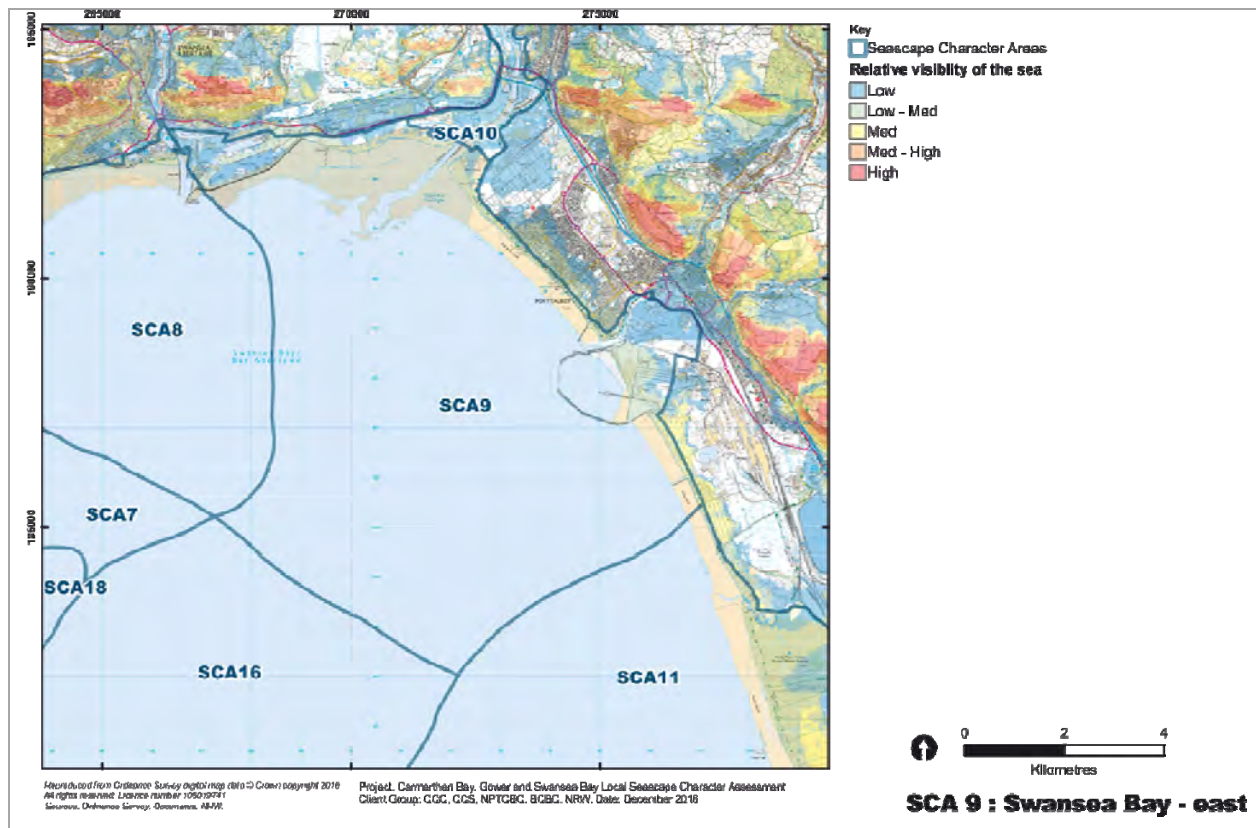
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					
Summary							
<ul style="list-style-type: none"> The area is sensitive to sea level rise and increasing severity of weather due to the large flat area of developed coastal plain to the east, including housing and the steelworks, the exposure of dock infrastructure to the north and east with associated dredged channels, and the dune systems. The SMP long-term objectives are to hold the line adjacent to the Swansea and Port Talbot Docks, the new University campus, Aberafan seafront and Port Talbot steel works in order to mitigate the effects of sediment erosion and accretion through wave disturbance and protect properties through maintaining and upgrading existing defences. Swansea Dock have a sea wall and lock gates which act as a defence. Port Talbot dock is surrounded by land so only the lock provides a defence function. In both cases, ABP is the owner and operator. The dredged channels are the responsibility of the Neath and Port Talbot port authorities. The SMP long-term objectives along the coastal frontage of the Baglan and Crymlyn Burrows is of managed realignment to enable the dune system to function naturally with minimal interference. There may be a need for secondary setback defence in the longer term if there is potential for flooding of hinterland assets such as the power station. Visitor pressure is primarily problematic in relation to unauthorised motorcycle scrambling around the Neath estuary and nearby dunes. This causes erosion, lack of tranquillity and also 							

adversely affects other users.

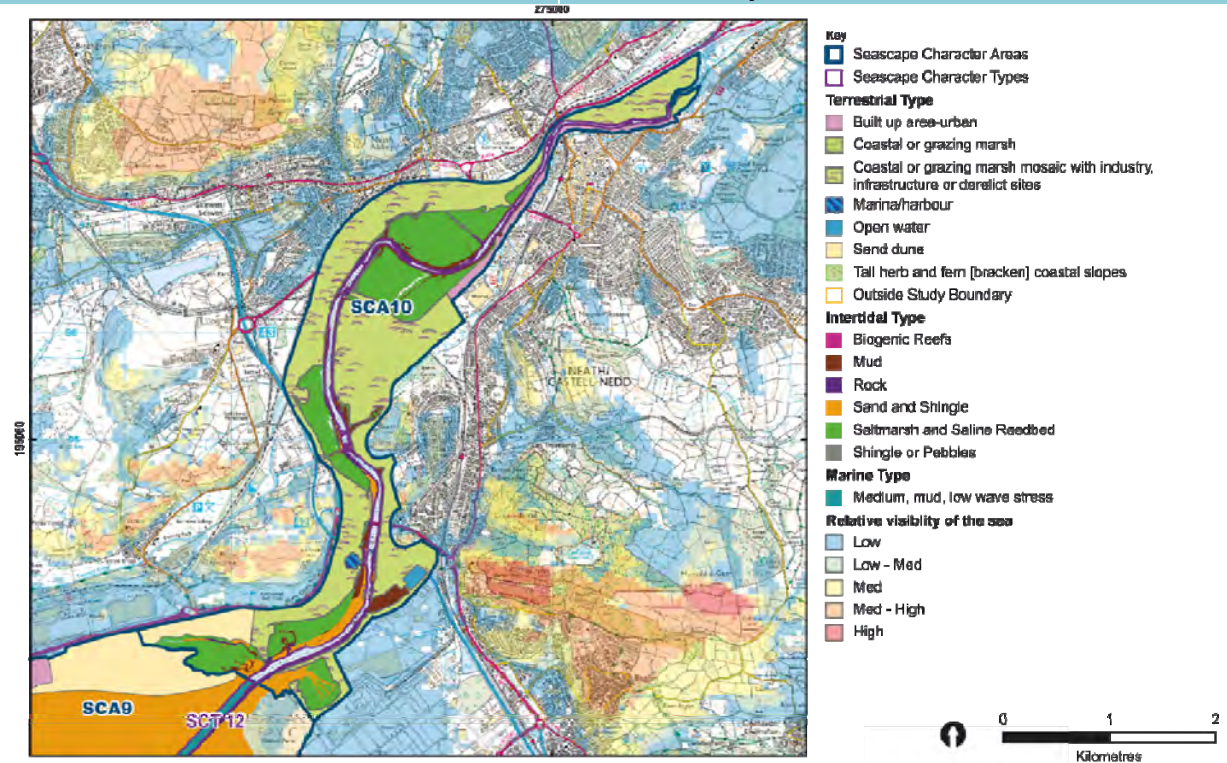
- Beach litter and three sewage outfalls have some effect on the quality of Aberafan beach.
- The Swansea Bay Tidal Lagoon has granted a Development Consent Order but other consents are under determination at present. This development is very large scale protruding 3.5km into Swansea Bay, and would significantly change the character of Swansea Bay if implemented. The coastal processes would be changed due to the revised coastline and the flows of water from the lagoon. The impounded water would be at a different level to the water outside for the majority of time. The lagoon would split the bay into three components, and would remove the unified sweeping character created by the wide beaches along the shore. Views from the coast would be interrupted by the high rock armour sea walls and the offshore visitor centre will be noticeable to the west (in SCA 8). The lagoon is intended to be used by a number of sporting activities and mariculture so this part of the bay will become busier and people would have access to sea wall reaching out into the bay, giving a new perspective on the seascape. Further tidal lagoon development would have a very significant effect on seascape character and the use of the coast.
- The future of the steel works that are highly prominent in this area which face an uncertain future, subject to global economics.
- Further onshore renewable developments on the hills behind Port Talbot would cumulatively impact on this otherwise positive backcloth.
- Development pressure would include the Strategic Regeneration Area at Port Talbot Harbourside, the Strategic Employment Site at Baglan, the proposed Fabian Way Corridor mixed use strategic site and the ongoing SA1 development in Swansea.

Key sensitivities

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The nature conservation value of Crymlyn Burrows.</p> <p>The open, exposed unspoilt character of the area offshore with views towards Gower and Exmoor.</p> <p>The intrinsic character of the wide sandy Aberafan beach.</p> <p>The sense of wildness and exposure of the Neath estuary mouth, despite the proximity of development.</p> <p>The strong backcloth of Kilvey Hill and the South Wales coalfield plateau slopes such as Mynydd Dinas which are unspoilt in parts.</p> <p>Views towards Swansea and Gower from the Aberafan promenade and beach.</p> <p>Users of the Wales Coast Path are sensitive receptors.</p>	<p>The dramatic industrial profile of the Port Talbot steelworks and associated port cranes. While impressive in scale these can also be considered detractive.</p> <p>The turbines on Mynydd Brombil and solar farm on Mynydd Emroch.</p> <p>Views of the Swansea docks.</p> <p>Use by shipping approaching and leaving Port Talbot, Swansea and Briton Ferry.</p> <p>The straight, low coastline with simple forms, and flat hinterland.</p> <p>Simple seascape pattern.</p>



Seascape Character Area No:	10
Seascape Character Area Name:	Neath estuary



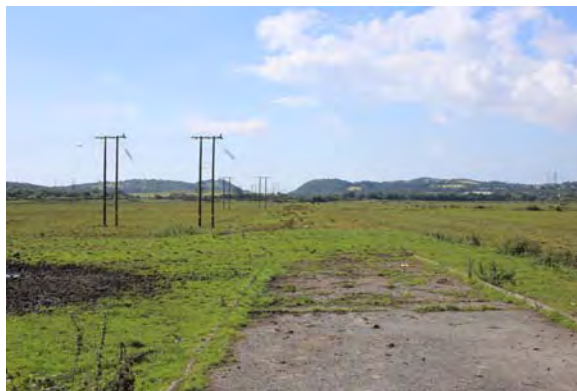
SCA 10: Neath estuary



The Neath/Nedd estuary at low tide running beneath the M4 and A48 bridges looking towards Giant's Grave wharf



Neath estuary looking towards the Paper Mill with derelict wharves in the foreground



Grazing marsh looking south

Summary Description

The River Neath (Afon Nedd) tidal estuary extends from Baglan Bay up beyond Briton Ferry and Neath. To the south, it is flanked by sand flats and dunes. Upstream the sinuous muddy river is flanked by old wharves, a derelict Brunel dock, industrial land, flat grazing marsh and the edge of Neath. The wharf at Giant's Grave is still used for scrap and Monkstone Marina provides a shelter for recreational boats. The flat grazing marsh provides an open contrast to the surrounding developed land and the surrounding hills generally act as a positive backcloth. The M4 viaduct is the dominant visual and sensory feature in the lower reaches.

Key characteristics

- The River Neath (Afon Nedd) tidal estuary extends from Baglan Bay up beyond Briton Ferry and Neath.
- The river channel is flanked by sand flats and dunes near the estuary mouth. Upstream it is flanked by old wharves, industrial land, flat grazing marsh and the edge of Neath.
- Crymlyn Burrows and Ferryboat Inn quarry are SSSIs.
- The tidal estuary has historically given access to the mineral riches of the Neath valley and hinterland but has also acted as a barrier to east-west travel.
- Routes across the river have been guarded by a Roman fort and two medieval castles, one at Neath. The modern elevated routes of the M4 and A48 now visually dominate the estuary.
- The river estuary was at one time served by many wharves and pills which in turn were connected to canals and latterly railways.
- The wharf at Giant's Grave is still in use, mainly for scrap, and historically gained its name from dismantling warships and other large vessels.
- Briton Ferry dock was designed by IK Brunel and was a major coal exporting site but is now derelict.
- The area was once known for its picturesque juxtaposition of wooded hills with water and early industry.
- The river is not a safe harbour in heavy weather but the dredged Monkstone Marina is sheltered and used for recreational boats.
- The Coast path is well used by walkers and other users enjoying views out towards Swansea Bay.
- The lower part of the estuary is dominated by the M4 viaduct with its movement and noisy traffic, and is characterised by the derelict or run down industrial frontages, security fences, wharves and relict structures either side of the muddy tidal channel.
- Further upstream the valley opens out to flat grazing marshes and marsh by the side of the sinuous tidal river which act as a foil to the surrounding industry, urban settlement and busy roads.
- The partially wooded hills still act as a generally positive backcloth to the valley and its developed character.

Natural influences

The tidal River Neath (Afon Nedd) estuary extends from Baglan Bay up beyond Briton Ferry and Neath. The underlying east-west striking bedrock of mudstones and sandstones of the Upper Carboniferous Coal Measures is covered by glacial till. North-south faults control the line of the

river valley through Briton Ferry turning north east-south west at Neath.

Mud flats and banks flank the river close to Baglan Bay. The sediment coarsens downstream into sand flats, bars and dunes of the estuary mouth. Behind these on either side are the dune fields of Crymlyn Burrows and Baglan Burrows. The estuary mouth is subject to high tidal range (<10m) and high wave energy, the energy dissipating above the constricting slag embankment.

The estuary mouth is a site of coastal accretion, collecting sand sediment from tidal and longshore transport, and onshore blown sand, and also river deposited silt and mud. As a result, periodic dredging is required for the Baglan channel.

Inland, the flat valley floor of river terraces comprises of superficial alluvial deposits which support grazing marsh.

Crymlyn Burrows and Ferryboat Inn quarry are SSSIs. Parallel sand dune ridges at right angles to the River Neath are interspersed with tongues of saltmarsh. Dunes are encroaching on this saltmarsh to the west. There are wet dune slacks and car woodland in places. The Neath estuary is used by part of a population of small waders overwintering in Swansea Bay.

Cultural influences

This tidal estuary has given access to the mineral riches of Neath valley and its immediate hinterland but has also acted as a barrier to east-west travel.

Fishtraps are recorded at the mouth of river now engulfed by the extension of the Crymlyn Burrows.

The Roman fort of *Nidum* on the west bank guarded the lowest crossing point on the River Neath, as did three medieval castles, one removed by the M4, located on a hill above Monkstone Marina, one in the centre of the present town, the third across the river, thought to be near where Neath Abbey was later founded for a community of Savigniac monks before being absorbed into the rapidly expanding Cistercian monastic order in 1147. More modern routes across the estuary have been the ferry from the 'Briton' inn, Brunel's South Wales Railway (later the Great Western Railway), and 20th century motor-roads.

The mining and export of coal is evident from the 16th century but the estuary developed into a major industrial landscape in the late 17th, with the development of copper works, which required the import of ore and of limestone.

The estuary was at one time served by many small wharves and pills. In 1795 the Neath Canal was completed, followed in 1824 by the Swansea to Aberdulais Canal (Tennant Canal), and in 1850 and 1851 the South Wales Railway and Vale of Neath Railway respectively. Evidence of the area's industrial past the Melyn Tinplate Works (NPRN 302182), and the Neath Abbey ironworks, which under the management of the Quaker ironmaster Joseph Tregelles Price, supplied marine engines as well as other engineering products all over the globe. It was active from 1799 to around 1890. The area's mining and metallurgical past is evident in the use of slag to build sea-defences. Briton Ferry dock of 1861 was designed by IK Brunel, and was a major coal-exporting site. The accumulator tower which powered the hydraulic lock gates is still extant. In 1875 the French-born engineer Louis Gustave Mouchel established himself in Briton Ferry and quickly became involved in a number of successful enterprises. His consultancy company was directly responsible for introducing ferro-concrete (also called 'reinforced concrete') to Britain and still practices.

East-west routes dominate the landscape, including the 17-span steel Cleveland viaduct completed in 1955, and particularly the Neath viaduct on the M4 motorway of 1992-3. Other bridges include a swing bridge on the Rhondda and Swansea Bay Railway, built 1892-1894, in use for goods traffic. After the Second World War many old warships were scrapped along the quayside at Briton Ferry. Though some sources say that this is the origin of the name 'Giant's Grave', an 1830 map shows a 'Giant's Grave' which probably relates to a Bronze Age burial cairn.



Giant's Grave- ship dismantling (source: Coflein)

The impressive ruins of Neath Abbey and the picturesque wooded hills enclosing the river around Briton Ferry of the attracted a number of artists, some of whom were fascinated by the contrast of majestic ruins, landscape and 'modern'. Paintings by late eighteenth and early nineteenth century artists such as Julius Caesar Ibbetson, John Varley, JMW Turner and William Daniell show idyllic scenes with the hills juxtaposed with the water and boats.



Briton Ferry, Philip James De Louthembourg (1786 or 1800).



Briton Ferry, 1814

In terms of navigation, the river is not a safe harbour in heavy weather but the dredged Monkstone marina is sheltered and accommodates a small number of berths. It also provides boat storage and there is a slipway. It is accessed through a sill gate only accessible around two hours either side of high tide. Within the river, the tidal channel is unmarked. Commercial ships generally travel as far as tidal moorings on the river at Giant's Grave quay in Briton Ferry. These mainly handle goods for Tata steel including coil and scrap for Europe. The wharf is also used for importing sand and gravel occasionally. Further upstream, Neath Abbey wharf, is also used for scrap metal on an occasional basis.

The Wales Coast Path is very well used, especially on the south side of the estuary. Users include walkers, bladders, dog walkers and young families with buggies. Anti-social users such as scrambling bikes also use the path to gain access to the dunes to the south west.

Recreational rod fishing is carried out from stations on the south side of the estuary.

The floodplain of the river is bounded by development on both sides with industry on the flatter land and directly adjacent to the river, and settlement on rising land, such as at Briton Ferry and Neath.



Giants's Grave wharf



Looking inland from Neath towards the unspoilt upper tidal limits and grazing marsh

Aesthetic, perceptual and experiential qualities

This area runs inland on the valley floor of the Nedd estuary, and is bounded by hills, higher to the east, and so feels relatively enclosed and sheltered compared to the seaward SCAs. The valley floor itself is relatively open but the edges around the canals and docks are enclosed by trees, landform and built form. The river has a strong tidal flow and range so the exposed muddy banks are very apparent and create high sides at low water. At spring tides, the floodplain grazing marsh is flooded creating a dramatic, wide expanse of water enclosed by the surrounding hills.

The M4 and A48 bridges form the main foci crossing high above the water level although the low railway swing bridge provides the focus centrally. The Giants Grave quayside and Brunel designed dock with accumulator tower are key features visible from the water's edge and the nearby road bridges. The dock is now silted up with mud or filled with deteriorating wooden and stone structures providing evocative vistas of dereliction.

The main marine related activities are the low key use of the dock at Giant's Graveyard and the small tidal Monkstone marina. The hinterland is used for industrial/commercial uses or very low lying marshy pasture with complex drainage channels which give a strong texture. Apart from the Wales Coast Path, and the canal paths, the area is generally difficult to access and experience due to the lack of public rights of way, and fenced off private land and waterbodies, protected against theft and vandalism. This, with the derelict areas, induces a feeling of threat.

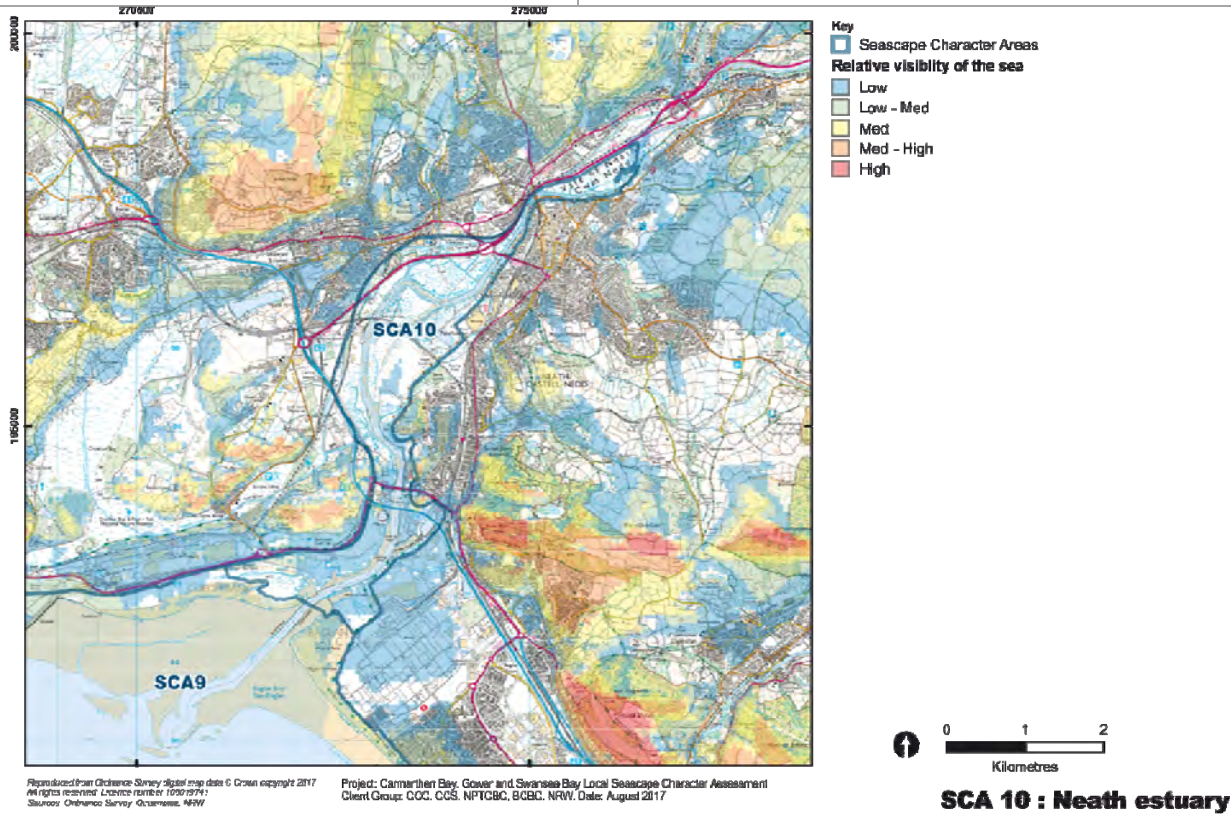
The A465 and M4/A48 bring movement and noise to both the north and southern parts of the area respectively. Overall, the area lacks tranquillity except where screened from the roads and industrial structures. There are numerous detractors including the derelict areas and structures, scrapyard at Giant's Graveyard and various aging industrial buildings. The roads, active industrial areas and surrounding urban areas provide lighting around the relatively dark valley floor and river.

Cultural benefits and services

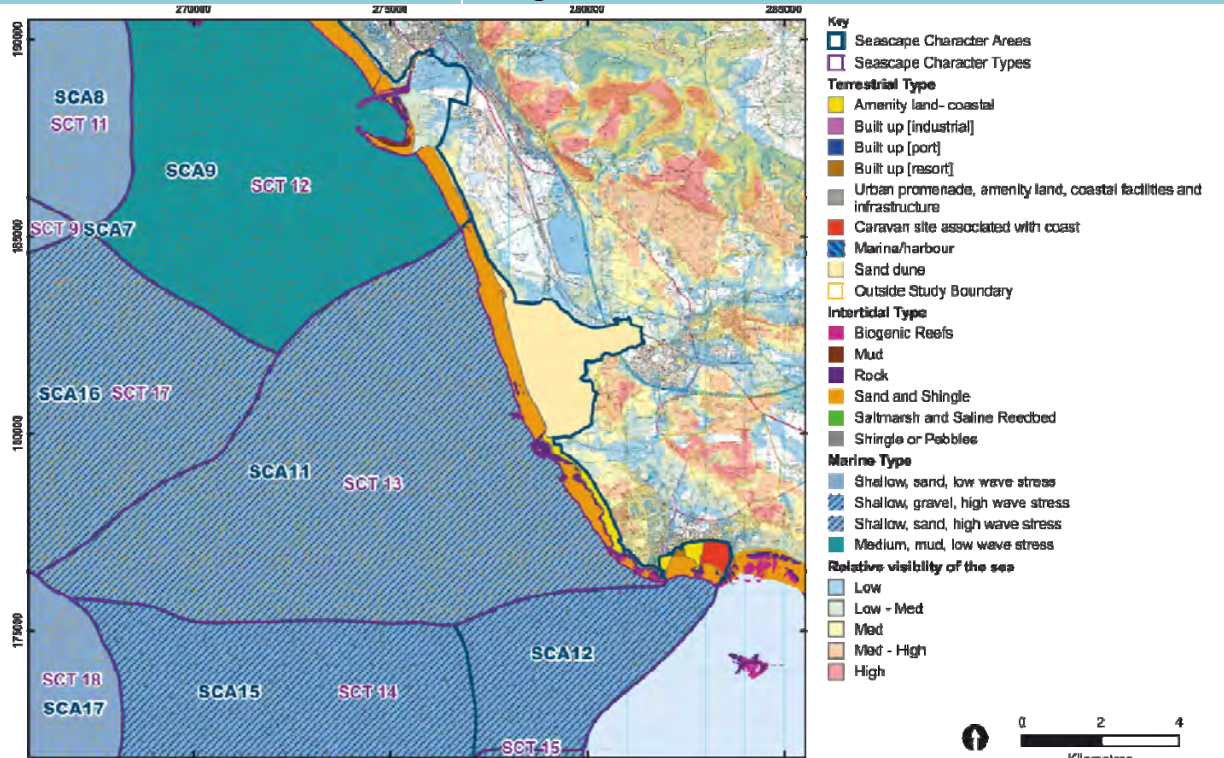
The area contributes significantly towards leisure and recreational services improving health and well-being through the Wales Coast Path and sailing from Monkstone marina and slipway, to artistic/cultural heritage in terms of Brunel's Dock and Giant's Grave's associations with naval ship dismantling and to natural heritage in through the dunes SSSI and saltmarsh.

Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					
Summary							
<p>The area is sensitive to sea level rise in terms of the rise in the bed of the tidal river and estuary and associated effects on built assets including the wharf /dock facilities, flooding of properties and the effect on the dunes, salt marsh and coastal grazing marsh which would be covered on an increasingly regular basis.</p> <p>The SMP long-term objectives are to hold the line the Neath estuary to avoid potentially contaminated fill from being released into the estuary. The dredged channel is the responsibility of the Neath Port Authority.</p> <p>Over time there has been a deterioration of wharf and dock infrastructure due to lack of use which may be set to continue.</p> <p>New employment development is proposed in the area of the old warehouses at Briton Ferry near the M4.</p> <p>Fly grazing on the salt marsh may affect flood management.</p>							
Key sensitivities							

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The open, exposed estuary and its tranquil and relatively remote character close to the Swansea Bay.</p> <p>The dunes and salt marshes and their associated nature conservation value.</p> <p>The Brunel dock and other historic wharves/docks with their associated heritage value.</p> <p>The flat, open character of the grazing marsh and its relatively unspoilt nature north of Neath.</p> <p>The sinuous, ever-changing tidal channel of the Neath which creates interest.</p> <p>Users of the Wales Coast Path and dunes.</p>	<p>Presence of the M4 and A48 and associated noise and lighting.</p> <p>Presence of docks, industrial structures and dereliction.</p> <p>Presence of unauthorised uses such as scrambling.</p>



Seascape Character Area No:	11
Seascape Character Area Name:	Margam to Porthcawl



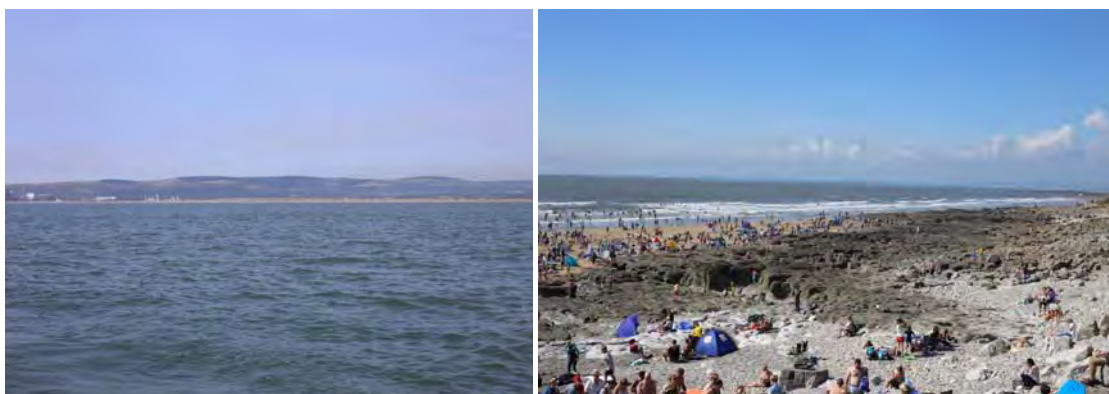
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 Sources: Cadastre-SuWey, Decimale, AEW

Project: Carmarthen Bay, Gower and Swansea Bay Local Seascape Character Assessment
 Client Group: GCB, NPTGB, BQBC, NRW, Date: August 2017

SCA 11 : Margam to Porthcawl



View from Sker Point north towards Port Talbot steelworks and the coalfield scarp slope



View from offshore towards Kenfig Dunes and the coalfield scarp backdrop

The crowded beach and rocky foreshore at Rest Bay

Summary Description

The SCA forms the south eastern part of Swansea Bay between Margam and Porthcawl Point with wide beaches exposed to the prevailing south westerly winds. The gently shelving seafloor is primarily sand and there are a series of parallel shoals offshore, some drying, which are a hazard to navigation. Scarweather Sands forms the outer limit of the area and has an anemometer mast and navigation marks. The coast is relatively straight and low and is backed by very extensive dunes at Kenfig to the north of Sker Point. The dunes are a National Nature Reserve, designated as SAC and SSSI and are also a Landscape of Outstanding Historic Interest. There are fairly wide beaches backed by rocky platforms in places and Rest Bay is popular for surfing. The primary local foci are the isolated Sker House and the seafront at Porthcawl, but there are wide views out to open sea and towards the southern Gower coast.

Key characteristics

- The west facing side of Swansea Bay from Margam to Porthcawl Point slopes very gently offshore with a seafloor of sand with some areas of muddy to sandy gravel off the coast.
- The wave energy is strong with prevailing south-west winds and waves and a high tidal range.
- The southern edge of the area is defined by Scarweather Sands which is a drying sandbank. Towards the coast there are the drying Hugo Bank and also the Kenfig Patches shoals.
- These shoals make the area potentially hazardous for navigation and the area is generally avoided by commercial vessels although it is used for some leisure boating and recreational fishing.
- The coast is relatively straight and low with minor Limestone rocky points such as at Sker and Hutchwns.
- The beaches are generally wide backed by rock platforms south of Sker Point.
- Kenfig and Margam Burrows extend far inland.
- Kenfig Pool and Dunes are National Nature Reserve and with the beach form Kenfig SAC. An SSSI designation runs inland.
- The dunes were formed by a series of storms in the mediaeval period which covered the port of Kenfig with its castle. They are a Landscape of Outstanding Historic Interest with finds from all periods.
- The coast to the north Sker Point was notorious for shipping losses. A typical loss was a schooner, the Trevaunance, carrying copper ore to Swansea in 1836 and the Samtampa, a liberty ship, marked by a plaque on the Coast Path.
- Offshore, in the Second World War, the lightship at West Scar was accidentally sunk by a minesweeper and there were losses of aircraft either approaching or taking off from nearby Stormy Down.
- Porthcawl developed as a coal port in the 19th century and the harbour remains. It became a popular resort for South Wales workers after the First World War.
- The main accessible beach is at Rest Bay which is heavily used, particularly by surfers and body boarders.
- This stretch of coast feels open and exposed south westerlies and has generally a simple, low, uncluttered hinterland.
- The sea is open and unspoilt with relatively limited use due to the navigational hazards.
- The main visual foci locally are widely spaced on the open coast and include the highly

distinctive, isolated Sker House, the Royal Porthcawl Golf Club buildings just back from the coast and the seafront buildings at Porthcawl. Port Talbot steelworks are apparent to the north.

- The Kenfig Dunes, Sker Point and adjacent beaches provide a tranquil, open and exposed area accessed by a few walkers enjoying the natural seascape.
- The seafront at Porthcawl and its landscaped promenade has a coherent and positive character, popular with visitors who enjoy the sea views.
- The key views are from the beaches and Coast Path out to sea and across to the southern Gower peninsula coast and Exmoor.

Natural influences

The west facing side of Swansea Bay from Margam to Porthcawl has offshore underlying bedrock of roughly west-east striking Upper Carboniferous mudstones and sandstones, mostly Coal Measures. Beneath the northern bay at Margam this gives way southwards to Lower Carboniferous limestones exposed onshore from Sker Point to Porthcawl. The Upper Palaeozoic rocks are unconformably overlain across the Vale by Mesozoic marls and limestones, and there is widespread Quaternary cover. In the bay, the Carboniferous Limestone is widely overlain by red marls of the Triassic Mercia Mudstone. Farther into the bay this succession is faulted against Lower Jurassic marls and mudstones and offset by a roughly north-south fault. The bedrock is overlain by a thin Quaternary sediment cover. Sea floor sediment is predominantly sand, with areas of muddy to sandy gravel off the coast.

The shallow marine shelf slopes very gently (<1°) west south west to a depth in the bay of <20m across from Porthcawl to Mumbles. The offshore sand bars of Scarweather Sands and the shifting Hugo Bank form shallow (<10 m) long (>12 km) linear shoals running east-west off the coast. The shoals shelve more steeply on the southern side. Between these shoals the resistant Carboniferous Limestone is exposed locally on the seafloor.

Sand beaches stretch from relatively straight coast from Margam Sands to Porthcawl. The east-west striking Carboniferous Limestone forms minor points and also rock platforms at the back of beaches from Sker Point southwards. Kenfig Burrows and Margam Burrows are extensive dune fields behind the beach from Sker Point northwards. Kenfig dunes are protected by a natural shingle revetment but have retreated slowly over the past century. They are now stabilised through management, and hence sediment supply from them is limited. The Afon Kenfig cuts through between the Margam and Kenfig Burrows.

Wave energy is strong along this stretch of coast exposed to the prevailing south west winds and waves. The high tidal range (<10 m) and exposure to tidal currents in the main Bristol Channel transport sediment along the coast in both directions. The Swansea Bay clockwise gyre transports suspended sediment largely within the system, leading to areas of net erosion and deposition. The main Bristol Channel tidal currents transport coastal sand eastwards. Wave processes transport sediment onto and around the offshore sand shoals. Onshore blown sand contributes to the dunes, although the amount of onshore sediment supply is limited. Wave abrasion and erosion affect the limestones.

The foreshore of Kenfig Sands and Rest Bay are predominantly smooth littoral sand and muddy sand broken up by other features. These include high energy littoral rock at Sker Point with Acorn barnacle and Sea snails spp. on exposed to moderately exposed eulittoral boulders and cobbles. Here there is also barren littoral shingle. Some littoral rock in Kenfig Sands host hydroids, ephemeral seaweeds and sea snails littorea in shallow pools.

Fringing Rest Bay and to the south is very exposed to very sheltered upper littoral fringe rock. Also around Hwtchwns Point and Porthcawl Point there are honeycomb worm reefs on sand-abraded eulittoral rocks, barren littoral shingle and small pockets of sand.

The coastal plateau of the Vale is fringed south of Kenfig by low limestone cliffs and rocky platforms. The Kenfig dunes sit on a shallow Triassic marl bedrock, which slopes up inland. Kenfig Pool and Dunes are a National Nature Reserve. This area plus the beach form Kenfig SAC. These designations overlay the Kenfig SSSI designation which also extends inland.

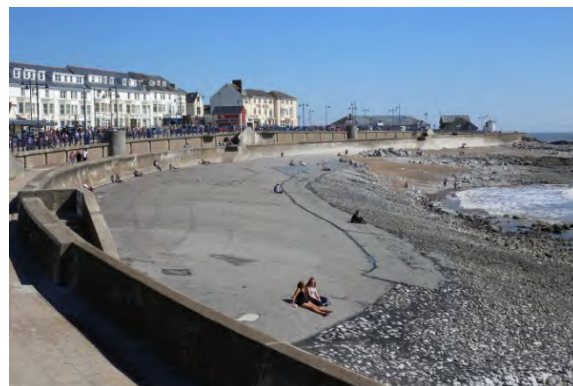
Kenfig has a very extensive dune habitat with standing water, woodland and scrub. The dunes are

wet due to underlying periglacial clays and silts and host the fen orchid. Associated coastal habitats include intertidal areas of each and rocks saltmarsh and swamp.

Between the Kenfig and Porthcawl there is pasture and the Royal Porthcawl golf course on the gently sloping coastal hinterland.



The popular Porthcawl promenade



The sweep of the promenade to the lighthouse

Cultural influences

This stretch of water has historically been dangerous due to the tides and sands and shoals. The coast to the north of Sker Point was notorious for its ship-losses, including the 16th century *Anne Francis*, wrecked near Gwely'r Misgl, then pillaged. Another typical ship-loss was the *Trevaunance*, a wooden schooner built at Padstow in 1836, lost carrying a cargo of copper ore from St Ives to Swansea. The Liberty ship *Samtampa*, built in Portland in 1943, was wrecked on Sker Point in 1947 with the loss of all on board and the crew of the Mumbles lifeboat who came to their rescue. A plaque nearby commemorates this tragedy.

There is a wreck of a lightship sunk in 1942 where it was moored at West Scar, after being run down by a minesweeper, HMS Rosette, a converted trawler. The last replacement light vessel on this station, ordered in April 1945 and built by Phillip & Son, Dartmouth in 1947, was sold to the Musée de Bateau at Douarnenez, where it is preserved.

Wartime aircraft losses are also recorded in this seascape - a Fairey Battle which crashed on approach to nearby Stormy Down at Kenfig on 2 May 1941 and a Whitworth Whitely which crashed at Kenfig Sands after take-off on 15 June 1941 - reminders of the nearby RAF presence.

The west coast paleolandscapes survey identified this area as once being high ground, with medium/high potential for survival of deposits. Where possible, deposits should be preserved in situ. West Scar was once marked by a lightship but this was withdrawn in 1989, replaced by a lit marker buoy. The marine areas include extensive areas of shoals and patches. A mussel bed is recorded off Gwely'r Misgl.

The once-broad estuary at the mouth of the River Kenfig, evident today by the land-locked Kenfig Pool and lesser ponds to the north, gave the area a strategic significance and enabled it to develop as a port. Kenfig may have been the site of a Roman fort, and was certainly the site of a castle and borough, established in the early 12th century by the Lord of Glamorgan but covered in sand due to a series of severe storms in the medieval period. The buried remains are known as the 'Pompeii of Britain'. The prominent and isolated Sker House, near Sker Point, is a 16th century mansion on the site of a grange of Margam Abbey.

Kenfig Burrows between the sea and Margam Mountain to the north, and has retained its distinctive appearance, despite the railway and motorway on its eastern fringes, themselves heirs to the Roman and medieval Martima ('Port Way'). The area includes part of the Merthyr Mawr, Kenfig and Margam Burrows Landscape of Outstanding Historic Interest. It has important peat deposits with finds from all periods.

Margam Moors, in the hinterland to the north, has been used for slag-dumping from the steel-works, and covering/disguising with sand to try to match the nearby dunes. The area is occasionally used for unregulated motorcycle scrambling.

Porthcawl, within the historic parish of Newton Nottage, developed as a coal port with the opening in 1828 of the Duffryn Llynvi & Porthcawl Railway from the collieries of Garnlwyd. The harbour remains. From the early 20th century, Porthcawl, on the southern tip of this seascape, was a popular resort with workers from all over South Wales from 1918 when the two-week long holiday was introduced. Its promenade reflects its sudden growth as one of the most popular holiday resorts in the country and it remains a major destination for beach holidays.



Valleys family visit to Porthcawl in 1951 (Geoff Charles)

The town and its surroundings have inspired poetry. Of Porthcawl, by Gwyn Thomas (1913-1981) in *A Welsh Eye*:

'Stand on the edge of Rest Bay...To the left, way beyond the teeming sand-dwellers at Trecco Bay, is the curl of clifftop turf at Southerndown where wreckers of Dunraven plied their odd trade. To the west is that coastal strip of massive hills and darkening skies.'

In terms of navigation, the series of shifting sandbanks and shoals which make navigation potentially hazardous. For example, Hugo Bank has moved 180m in recent years. To the seaward, the area is defined by Scarweather Sands which dry in parts and are marked by cardinal marks and lights at West Scar (with Racon), South Scar and East Scarweather. Between Scarweather and the coast are Hugo Sands which dry and the Kenfig Patches which can just reach the seas surface at low tide. These are marked by a red lit buoy and a lit cardinal mark to the east respectively. There are overfalls off Hutchwns Point. Commercial vessels tend to avoid this area, passing to the south and north west.

Commercial and occasional recreational rod and line are located in the area with whelk potting to the west out in the bay. Set beach nets, such as for bass, have also been used. Beach seining is carried out around Kenfig. Light otter trawling avoids the shoals.

The Scarweather Sands Round 1 offshore windfarm development zone is located on the sandbanks in the western part of the area. The windfarm, which had permission, has been withdrawn and the long standing anemometer mast is now removed.

Kenfig Sands are very lightly used, mainly by walkers but also for body boarding to the south east. Access to the north is restricted by Tata Steel's ownership of Morfa beach. The inshore waters are used occasionally for kite surfing and kite boarding with some surfing. Rest Bay is heavily used, mainly by surfers (with associated surf schools) and body boarders with some swimming and sunbathing. Coaststeering and climbing at relatively low levels of intensity has been carried out around Rest Bay. Sea angling is carried out off all the beaches.

Kenfig Dunes is used for wildlife watching, dog walking and also for unauthorised quad biking and motorcycle scrambling to the north. Further south, there is the Royal Porthcawl golf club located at Rest Bay at the western end of this area which overlooks the sea. There is a promenade that links Rest Bay with the town of Porthcawl with walking & cycling popular activities along its length.

Settlement is limited to the resort of Porthcawl and the isolated Sker House.

Aesthetic, perceptual and experiential qualities

The enclosure felt in Swansea Bay to the north is dissipated in this more open seascape, which is exposed to the south westerlies and westerlies coming up the Bristol Channel. The fairly linear coast and its simple hinterland are also less enclosed with dunes and low, gently undulating coastal hinterland. Locally, minor landmarks include the distinctive and isolated Sker House, the Royal Porthcawl Golf Club buildings and the coherent seafront buildings at Porthcawl. The wide sandy beach, highly visible at low tide, is the key feature. This is broken by Sker Point, some wave cut platforms and the series of small rocky headlands at Porthcawl.

Kenfig Dunes are large in scale and varied, allowing many people to feel lost and enclosed within the high dunes, although the main tracks are well used. Views are enjoyed by most people from the Porthcawl seafront and from Rest Bay which look across to Exmoor on clear days. Fewer people reach the more tranquil beach to the north with the barrier of Kenfig Dunes. Here wide views are possible to Exmoor and also towards the Gower peninsula and Swansea Bay with Kilvey Hill standing out.

Most people enjoy the seascape from Porthcawl with its landscaped promenade and busy cafes. The beach is limited and suffers from erosion and the tarmac used to combat this is a singular but detractive feature. The surf beach at Rest Bay can be very crowded in summer but provides a softer and accessible coast at other times of year.

In the winter, storms can create dramatic waves and spray rising high above the breakwater and lighthouse at Porthcawl.

At night, the lights of Porthcawl form the main focus within the area although the steel works and Swansea at a distance also act as a foil to the sea.



The profile of Kenfig Dunes from the wide beach

Cultural benefits and services							
The area contributes significantly towards leisure and recreational services improving health and well-being through the various activities on Rest Bay beach and walking along the coast and around Kenfig dunes, to artistic/cultural heritage in terms of Kenfig Landscape of Outstanding Historic Interest and to natural heritage in Kenfig Pool and Dunes National Nature Reserve SAC and SSSI, the form of the beaches and views towards Gower.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
	Key	Existing or potential change that may affect the selected special quality					
Summary							
<ul style="list-style-type: none"> The SCA is sensitive to sea level rise and increasing severity of weather in terms of effects on built assets such as the seawall and other coastal defences, and on natural features such as the dunes. The SMP long-term objectives are to hold the line adjacent to the built up area of Porthcawl through maintaining and upgrading existing defences. The Kenfig dunes are proposed for managed realignment to allow the dune system to respond and evolve naturally with minimal interference. The objective for the intervening coast is no active intervention to allow the coast to evolve and retreat naturally although this would not preclude maintaining or improving existing defences at Rest Bay or Royal Porthcawl Links. Visitor pressure erodes the natural qualities of Rest Bay in season. 							

- Scrambling and quad bikes erode and reduce the tranquillity of the dunes to the north.
- Tidal lagoon development would have a significant effect on seascape character and the use of the coast.
- Any revival of an offshore windfarm at Scarweather would change the character of the area.
- Any new development on the open coastline would be likely to be highly visible.

Key sensitivities

Factors contributing to sensitivity

The nature conservation and cultural heritage value of Kenfig dunes.

The open, exposed unspoilt character of the area offshore with views towards Gower, Exmoor and Glamorgan Heritage Coast.

The intrinsic character of the wide sandy and mainly empty beaches.

The tranquillity of the area away from Porthcawl.

The open character of the coast with few features.

The notable focus of Sker House.

Views towards the Glamorgan Heritage Coast and Exmoor from the promenade and beaches.

The scale and character of the seafront buildings and boulevard facing south.

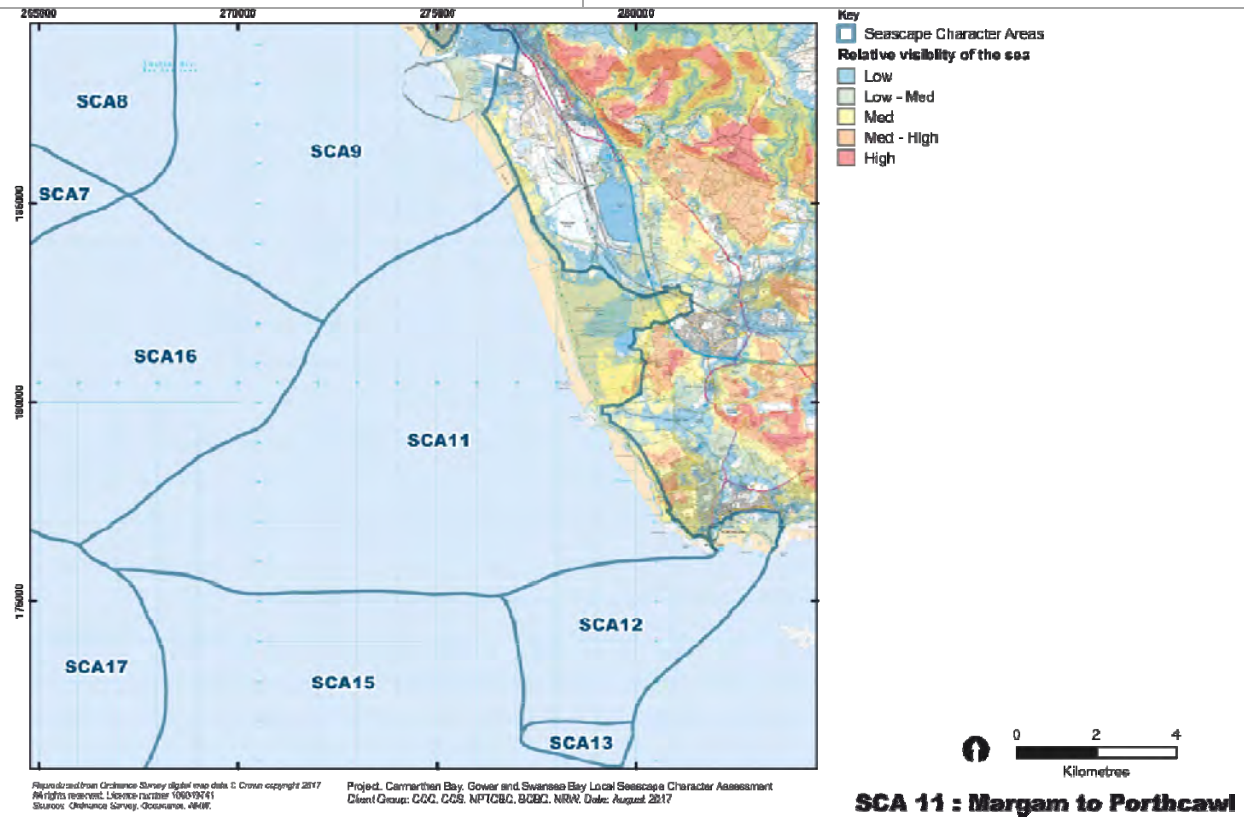
Users of the promenade are sensitive receptors and include Wales Coast Path users.

Factors detracting from sensitivity

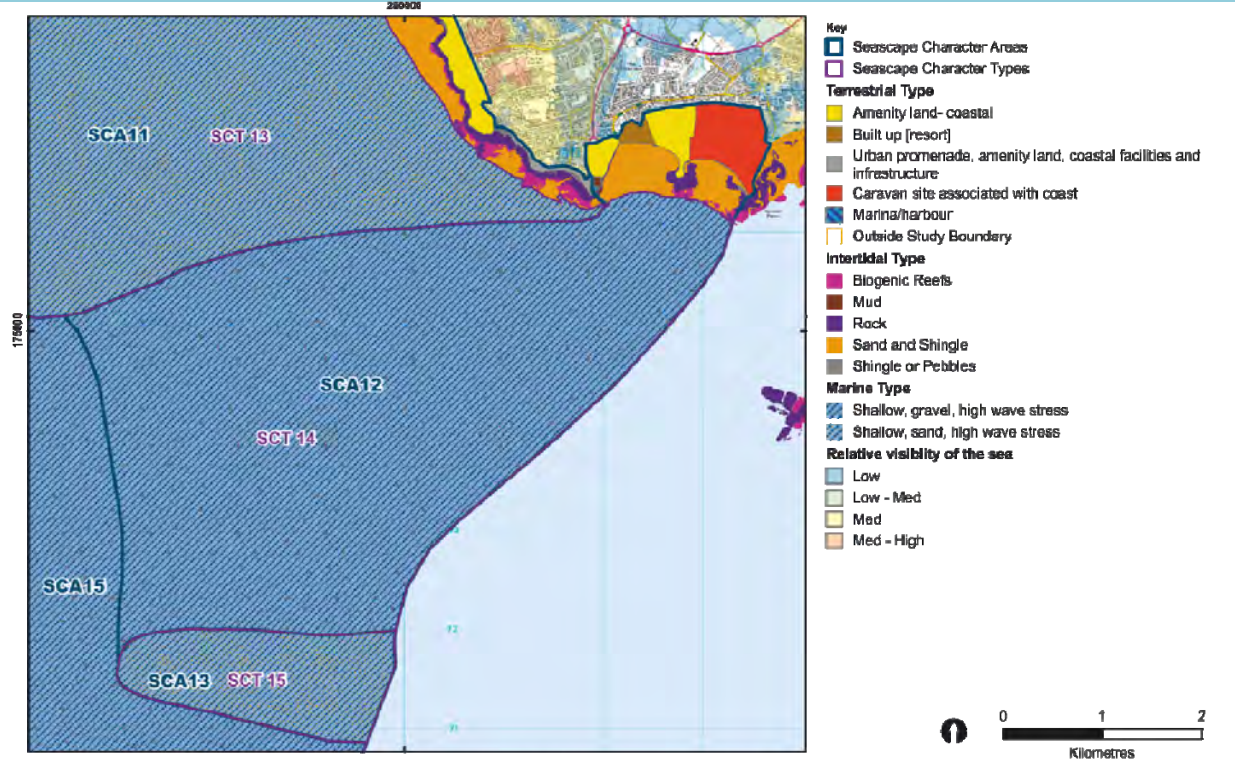
The straight, low coastline with simple forms, and flat hinterland.

Simple seascape pattern.

Large scale views and the large detractor of Port Talbot steelworks to the north.



Seascape Character Area No: **12**
 Seascape Character Area Name: **Porthcawl**



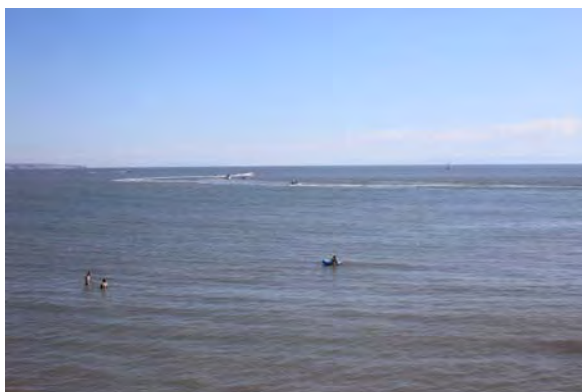
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Project: Carmarthen Bay, Gower and Swansea Bay Local Seascape Character Assessment
 Client: CCG, CCG, NPFC/BC, BGS, NRW, Dales August 2017

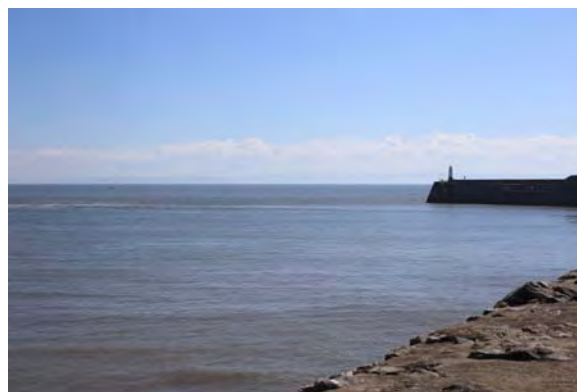
SCA 12: Porthcawl



View from the promenade along Sandy Bay showing the funfair



View out from the promenade showing water users



View from the promenade towards the lighthouse and breakwater

Summary Description

The SCA lies between the relatively sheltered south-facing sandy bays of Sandy Bay and Trecco Bay out to West Nash sand bank. The bays shelf gently out to sea but Fairy Rock, just offshore, dries at low tide. There is a small marina in the drying harbour at Porthcawl and the sea is used for recreational boating. The beaches are very popular and there is the Coney Amusement Park and the very large Trecco Bay Holiday Park on the flat hinterland to the north. The main focus of views is the lighthouse on the breakwater and towards the Glamorgan Heritage Coast.

Key characteristics

- Porthcawl Point and Newton Point contain the south-facing Sandy Bay and Trecco Bay incised between small headlands of Carboniferous Limestone.
- The sandy bays shelf gently south westwards and wave energy and tidal range are high although the enclosed bays are protected from the prevailing south west winds and waves.
- Fairy Rock offshore dries in some tides and the southern edge of the area is defined by the sandy shoal at West Nash.
- The rocks and shoals, combined with the drying rock ledge west of Porthcawl harbour and strong tidal currents mean that navigation is potentially hazardous .
- There are numerous wreck sites inshore close to the harbour entrance, mainly of small vessels.
- Porthcawl developed as a coal port in the 19th century. It became a popular resort for South Wales workers after the First World War.
- The harbour is locked and accommodates commercial fishing boats and has a small marina for 70 boats and a slipway.
- The sea is popular for recreational boating including power boats and jet skis emanating from both the harbour and the Newton slipway to the east of the area.
- The beaches are very popular for general beach activities and are usually crowded in season. There is also wind surfing and kite surfing.
- Behind the beaches on the flat hinterland are Coney Beach Amusement Park and the very large Trecco Bay Holiday Park (static caravans) backing onto the eastern beach.
- This SCA has an intense, busy seaside holiday character.
- The main visual foci locally are Porthcawl lighthouse on the breakwater and the Amusement Park.
- There are superb views towards the cliffs of the Glamorgan Heritage Coast to the East and to Exmoor on clear days.
- The exposure, openness and tranquillity of the seascape increases to the south and west beyond the harbour and beaches.

Natural influences

Porthcawl Point to Newton Point contain the south-facing Sandy and Trecco Bays incised between small headlands of Carboniferous Limestone.

The underlying bedrock offshore is east-west striking Carboniferous Limestone, overlain further south by upper Triassic-Lower Jurassic marls and mudstones. The Quaternary sediment cover is muddy to sandy gravel, and gravel, with patches of rock exposed at Fairy Rock.

The bay shelves gently (<1°) south westwards, remaining <15m depth to beyond the Nash sand bank.

Wave energy and tidal range are high along this coast, although the enclosed bays are protected from the prevailing south west winds and waves. Some sediment transport onshore occurs in the form of blown sand. Tidal current velocity increases into the inner Bristol Channel (e.g. >2.4 m/sec off Nash Point to the south). Wave and wind abrasion affect the limestone headlands and foreshores. The sandy bays are entirely tidal.

The rocky limestone headlands of Porthcawl Point (with lighthouse) and Newton Point flank the two deep and gently sloping sandy beaches of Sandy Bay and Trecco Bay which are separated by Rhych Point. This has honeycomb worm biogenic reefs on sand-abraded eulittoral rocks closest to the sea. There are *Fucus spiralis* on exposed to moderately exposed upper eulittoral rocks and Acorn barnacle and sea snails spp. on exposed to moderately exposed eulittoral boulders and cobbles backed by low energy littoral rocks. Newton Point to the east also has honeycomb worm biogenic reefs on sand-abraded eulittoral rocks.

Backing the beaches are dune fields, still evident behind Sandy Bay although largely developed over elsewhere. These formed part of the Merthyr Mawr dune system which lies to the south. North-south faults, one through Rhych Point, offset the succession so that Trecco Bay is backed by red Triassic conglomerates, seen in a revetment at the back of the beach.

The onshore bedrock is Carboniferous Limestone, faulted against (north-south fault) and overlain unconformably by conglomerates of the Upper Triassic marginal facies. There is a patchy Quaternary cover of head and till inland, and the coastal dune system.

The hinterland is part of the urban area with built form and intervening open spaces. There are no nature conservation designations within this area.



The busy harbour



The harbour entrance with new lock gates

Cultural influences

Porthcawl, within the historic parish of Newton Nottage, developed as a coal port with the opening in 1828 of the Duffryn Llynvi & Porthcawl Railway from the collieries of Garnlwyd. Traces remain of the railway, built by John Hodgkinson, Wales' most prolific builder of early railways; much of the historic docks-work is evident, though exports ceased in 1898, including a warehouse occupied by the RNLI, and one of two surviving cast iron lighthouses in Wales. The Outer Basin has been redeveloped as a small craft marina.

Historic admiralty sailing directions note an anchorage offshore where vessels may wait for the tide in moderate weather. The 1857 wreck of the schooner *Castle* is nearby between the anchorage and Fairy Rock. However, there are numerous wreck sites close inshore such as the *Tell Tale*, *Brothers*, *Gordon* and *Edmund* on the sands close to the harbour and the *Henry* and *Dora* near the entrance. The latter was a wooden brigantine wrecked on the breakwater in 1869. The *Edmund* was a wooden dandy sailing from the Isles of Scilly to Porthcawl and was driven by a force 10 gale onto the sands in 1897.

The west coast paleolandscapes survey identified this area as once being high ground, with medium/high potential for survival of deposits. Where possible deposits should be preserved in situ.

Porthcawl became a demotic holiday resort from 1918, when the miners' two-week long holiday was introduced. Its Coney Beach Amusement Park dates from 1918, and is thought to have been built to

entertain American troops returning from the First World War, taking its name from the slightly larger New York pleasure park on Coney Island.

The Amusement Park as part of 'American Wales', was the venue (from 1948) for the South Wales Miners' Eisteddfod and for Paul Robeson's performance by telephone link to the Miners' Eisteddfod in 1957 when his passport had been revoked. The support of the miners for the campaign for the US Supreme Court to reinstate his passport, which was successful the following year.

The town and its surroundings have inspired poetry. Of Porthcawl, by Gwyn Thomas (1913-1981) in A Welsh Eye:

'Stand on the edge of Rest Bay...To the left, way beyond the teeming sand-dwellers at Trecco Bay, is the curl of cliff-top turf at Southerndown where wreckers of Dunraven plied their odd trade. To the west is that coastal strip of massive hills and darkening skies.'

In terms of navigation, this area lies between Nash Sands and the coast. The main nearby navigational hazards for boats are the Fairy Rock which is marked by a lit western cardinal mark with a bell, the drying rock ledge west of Porthcawl breakwater and tides which can reach 6 knots at the end of the breakwater. There are also overfalls off Hutchwns Point and the Tusker Rock to the south east. The harbour is best not approached in heavy weather and is only accessible an hour either side of high water. The breakwater protects the harbour and is indicated by a small white lighthouse which, though not operated by Trinity House, still acts as a navigational light. The drying harbour is small with a limited capacity for small boats and whilst sheltered from the north and west, suffers swell if the wind is from the south or east.

The lifeboat station by the harbour is the second busiest station overall in Wales with 73 launches during 2015. It was named the busiest inshore lifeboat station in Wales.

The three commercial fishing boats based in Porthcawl harbour catch a variety of fish including ray, bass and Dover sole. Commercial and occasional recreational rod and line are located to the south. Set beach nets, such as for bass, have also been used within the area. Light otter trawling avoids the Nash Sands shoals.

Nash Sands to the south are a licensed dredging area but are not currently being exploited.

The small harbour marina has capacity for 70 berths and a public slipway allowing the launch of dayboats and jet skis. Sea angling from the harbour is also popular here. Trecco Bay and Sandy Bay are heavily used for swimming and sunbathing and some surfing, body boarding and sailing. The bay is used occasionally for windsurfing and kite surfing. Sea angling is carried out off the beaches. The very large Trecco Bay Holiday Park (static caravans) lies behind the eastern beach and the funfair lies behind Sandy Bay.

Aesthetic, perceptual and experiential qualities

There is a contrast between the feeling of slight enclosure close to the coast with the simple, exposed, open character of the majority of the area. Sandy Bay and Trecco Bay beaches are protected from the westerlies by Porthcawl Point. Enclosure inland is provided by the fun fair and caravan park and flat land with gently rising hills behind the surrounding settlement. Out to sea the area has some degree of protection from Nash Sands which take some of the force of waves, particularly from a more southerly direction. Waves breaking on the submerged sand bar at lower states of tide form a feature and temporal visual boundary to the south.

The key visual foci are the lighthouse on Porthcawl Point and the structures of the Coney Beach Amusement Park (or funfair) which give the inshore area an intense, busy seaside holiday character. The sandy beaches are highly popular and usually crowded, particularly in season. Whilst people are perhaps mostly interested in the beach, water and leisure facilities, there are views to Exmoor on clear days, and also superb views towards the cliffs of the Glamorgan Heritage Coast to the east.

The Trecco Bay caravan park is large scale and, along with the large area of parking to the west, is a detractor. However, these cater for large numbers of visitors to this honeypot on the coast. At night, the lights of the funfair, town and lighthouse form the main foci.



A popular view across Sandy Bay

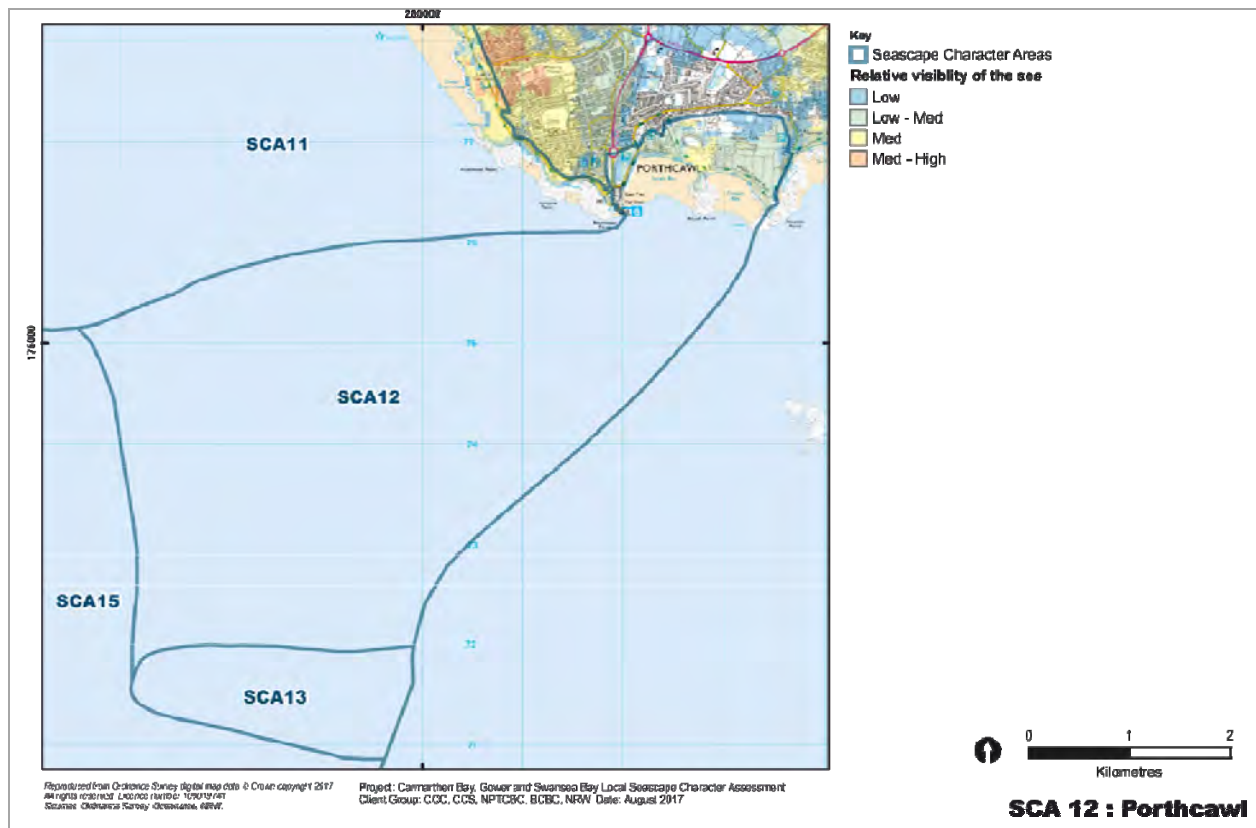
Cultural benefits and services							
The area contributes significantly towards leisure and recreational services improving health and well-being through the various activities on the beach and sea, to artistic/cultural heritage through historic harbour and associated buildings and to natural heritage in the form of the beaches and views towards the Glamorgan heritage coast.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality	■	■		■	■		
Views to and from the sea/land		■		■	■		
Diversity of seascape/landscape	■			■	■		
Sense of place	■	■		■	■		
Remoteness, tranquillity and wildness		■		■			
Distinctive geology /coastal processes				■			
Rich habitats and biodiversity							
Rich archaeology and built heritage	■				■		
Strong cultural associations	■			■	■		
Access to the coast or sea	■			■			
Valued beaches	■			■			
	Key	Existing or potential change that may affect the selected special quality					
Summary							
<ul style="list-style-type: none"> The SCA is sensitive to sea level rise and increasing severity of weather in terms of effects on built assets such as the seawall and other coastal defences and buildings/caravans on the flat hinterland. The SMP long-term objectives are to hold the line adjacent to the built up area of Porthcawl 							

through maintaining and upgrading existing defences, including extending defences over the relict dunes along the eastern shore of Newton Bay. The Trecco Bay caravan park is in private ownership and would need to fund any coastal protection.

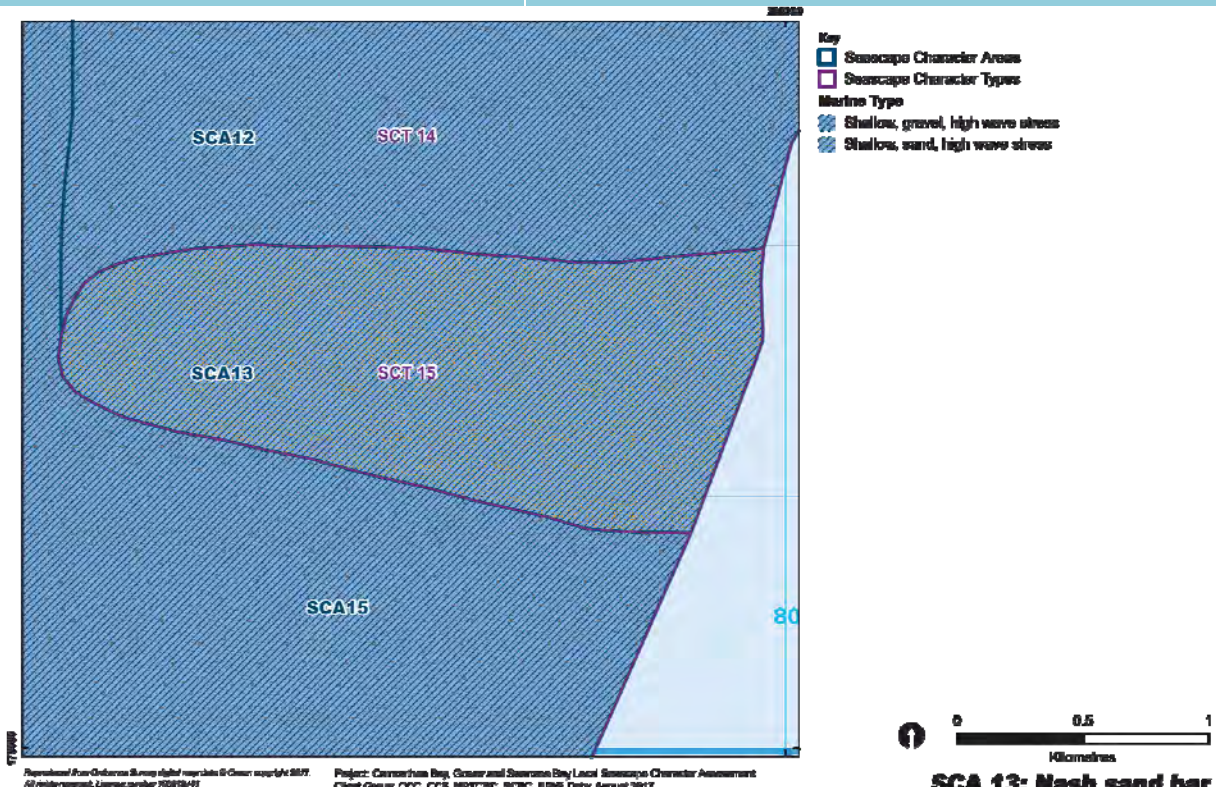
- Visitor pressure erodes the natural qualities of the beaches and noisy boating uses such as jet skis reduce tranquillity.
- Tidal lagoon development would have a significant effect on seascape character and the use of the coast. Tidal stream energy would have reduced effects although there may be onshore infrastructure.
- Aggregate extraction eg from Nash Sands may affect coastal processes/sand on beaches.
- There are plans afoot for a major development of the marina area to include an 'iconic' new building behind the marina at 'Cosy Corner' and on the existing car park. It is also understood that the funfair may also be leaving the area which will also alter the site's appearance from the water.

Key sensitivities

Factors contributing to sensitivity	Factors detracting from sensitivity
<p>The open, exposed unspoilt character of the area offshore with views towards Gower, Exmoor and Glamorgan Heritage Coast.</p> <p>The intrinsic character of the wide sandy beaches.</p> <p>Views towards the Glamorgan Heritage Coast and Exmoor from the promenade, breakwater and beaches.</p> <p>The distinctive profile of the historic lighthouse, breakwater and associated harbour buildings.</p> <p>Users of the promenade are sensitive receptors and include Wales Coast Path users.</p>	<p>Presence of large scale caravan park, deteriorating funfair and car park and associated lighting.</p> <p>The number of visitors especially on the beaches.</p> <p>Use by jetskis and other noisy motorised craft.</p>



Seascape Character Area No:	13
Seascape Character Area Name:	Nash Sand bar



View towards Nash Bank from Porthcawl with the Exmoor across the Bristol Channel

Summary Description

This area is located just offshore south of Porthcawl. It forms the western part of a linear shoal less than 10m deep with a sand and sandy gravel seafloor with high wave energy, sometimes of enhanced height and breaking, and strong currents.

Key characteristics

- Part of a linear shoal just offshore less than 10m deep comprising of sand grading out to coarser sandy gravels.
- Exposed to high wave energy and strong tidal currents.
- Forms a hazard to navigation.
- No wreck sites have been identified but wrecks include coastal traders sailing along the Bristol Channel.
- Sea with distinct, exposed character of enhanced wave height and breakers over the linear shoal at lower states of tide, with a sense of wildness and excitement in these conditions.
- The key visible coastal features are Porthcawl to the north, the Glamorgan Heritage Coast to the east and Exmoor to the south.
- Tranquillity and remoteness will be reduced by Porthcawl's proximity and character.

Natural influences

This SCA is the western end of Nash Bank linear sand bar and is a shoal area <10 m depth. This part of the shoal does not dry. The sand bar in total extends and tapers from Nash Point to Porthcawl, roughly aligned east-west, and exposing patches of rocky sea floor in its eastern part. It is underlain by mudstones of the lower Jurassic. The seafloor sediment is sand, grading outwards into coarser sandy gravels.

The shoal is exposed to high energy waves and currents. Winds funnel up the Bristol Channel. Wind waves are considered more important than swell waves in transporting sediment to offshore bars, eroding sediment off the upper beaches and moving it out to the bars. In the inner Channel, wave current velocity is >2.4 m/sec off Nash Point to the east, and the tidal range is >10m.

There are no nature conservation designations within this area.

Cultural influences

Many vessels are known to have been wrecked in this area although no wreck sites have been identified. The earliest known shipwreck associated with it is the Bristol privateer, *Royal Hunter*, lost here on 28 October 1747. 110 men were drowned in the incident. Four years later, the slaver *Indian Prince*, built in New England in 1739, came to grief, with its cargo 'of elephant's teeth, cotton, and ebony, with some liquors', stolen by the local population.

Otherwise, recorded losses are mainly of vessels engaged in the 'home waters' trade. The loss of the wooden paddle-steamer *Frolic*, built by John Scott at Greenock in 1827 on Nash sand bar on 16-17 March 1831 on a voyage from Haverfordwest to Bristol with the loss of all the passengers and crew, led to the building of the two lighthouses on Nash Point to the east. Smaller coastal traders include the *Shannon Packet*, a wooden sloop from Co Clare, lost in October 1847. Even the Lords of the Admiralty were not immune to the dangers of the bank. On 1 January 1940, whilst making an inspection in the *Black Eagle*, they became stranded but managed to get off on the next tide.

The west coast paleolandscapes survey identified this area as once being part of a floodplain with medium/high potential for survival of deposits. However, the dredging in this part of the bank by the Arco Dart amongst other suction dredgers has removed a fifth of its volume since the 1920s.

Nash Sands are avoided for navigation. They are marked at their western end by the West Nash lit cardinal mark with bell. The sand bank has a licence as an area for aggregate extraction but this ended in 2010.

The area is used by kayaking enthusiasts, capitalising on the enhanced wave conditions and by commercial and recreational rod and line fish at appropriate tide conditions.

Aesthetic, perceptual and experiential qualities

This area has not been visited but the sandbank has been observed at a distance from the coast. At just over 4km offshore at its closest point, the area will feel highly open, simple and exposed. The remains of the submerged sand bank, which has been dredged, will mean that waves, particularly at low states of tide, are higher and break, resulting in a disturbed area of sea. This sets the area apart from the surrounding sea character, and introduces a feeling of threat and excitement. Its qualities are determined by the natural forces of water, through swell and waves, and wind with

the area exposed to the south westerlies. There is a strong likelihood of some sense of wildness here.

There will still be some visual association with the coast. The buildings in Porthcawl would be highly visible and the eye drawn along the line of the sandbank east towards the Glamorgan Heritage Coast.

The number of leisure craft will be limited by the degree of threat although occasional kayakers will brave the waves and day trip fishing boats will be located nearby. There will be occasional views of commercial vessels using the shipping ways along the Bristol Channel to the south.

At night, the lights of the Porthcawl funfair, town and lighthouse, along with the Nash Point lighthouse to the east, would form the main foci.

Cultural benefits and services							
The area contributes to natural heritage in the form of an unspoilt marine area of sea and seabed, contributing to unbroken views from the coast across the Bristol Channel towards Exmoor. It contributes towards leisure and recreation services by creating conditions for sea fishing around it. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					

Summary

The SCA is sensitive to increasing severity of weather in terms of its location and character as a linear sand bar offshore, which partially protects the coastline to the north from erosion.

Nash Bank was historically one of the main areas for sand dredging. Although the western end of Nash Sands is licensed for dredging, dredging ceased in 2010.

Potential tidal lagoon development would have a significant effect on seascape character, enclosing the sea and affecting the local area and views from the Glamorgan Heritage Coast. Tidal stream energy would be likely to have reduced effects.

An offshore windfarm in the Bristol Channel Round 3 licensed area to the south west would change the feeling of remoteness and would affect and block views out to sea.

Key sensitivities

Factors contributing to sensitivity

The open, exposed, wild, unspoilt character of the area with views towards Gower, Exmoor and Glamorgan Heritage Coast.

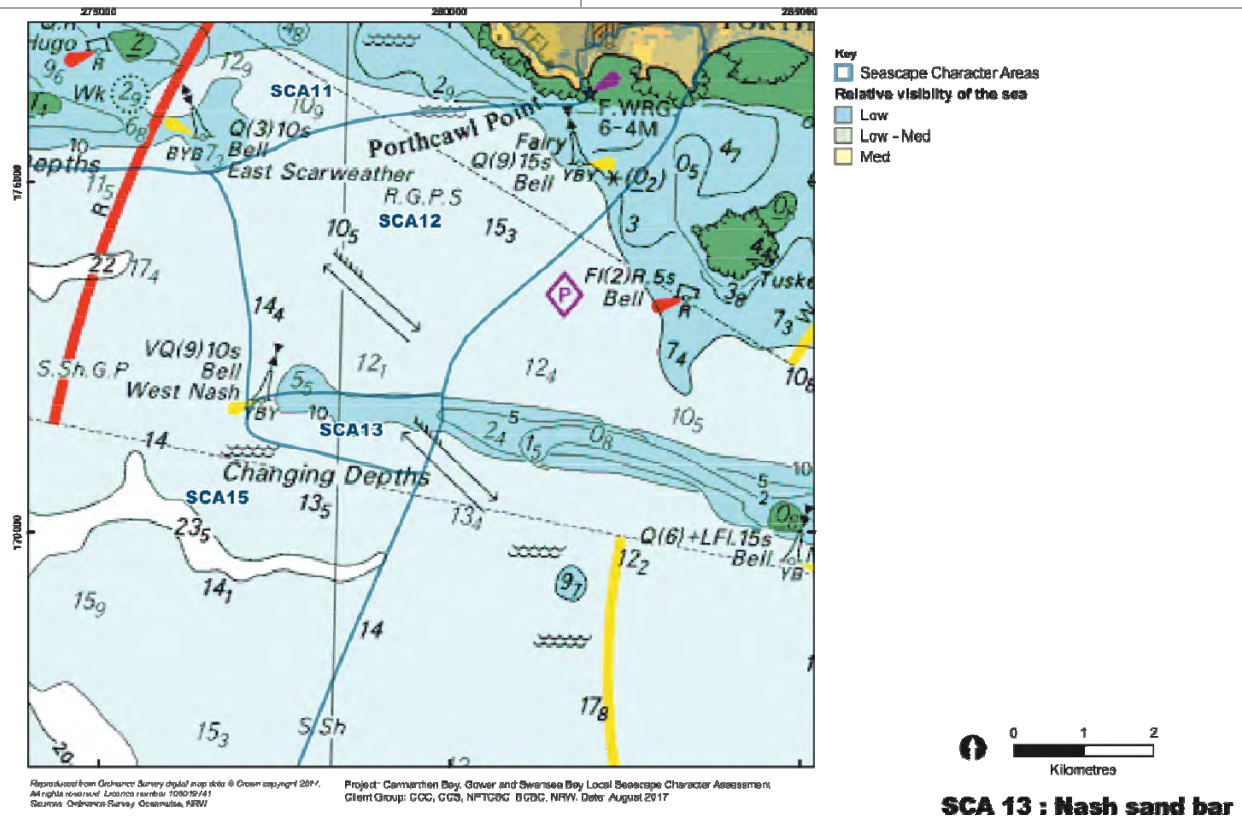
Forms part of the open setting of the Glamorgan Heritage Coast to the east contributing to the essentially unspoilt natural marine character of the area.

Users of the Glamorgan Heritage Coast, the Wales Coast Path and the promenade at Porthcawl are sensitive receptors.

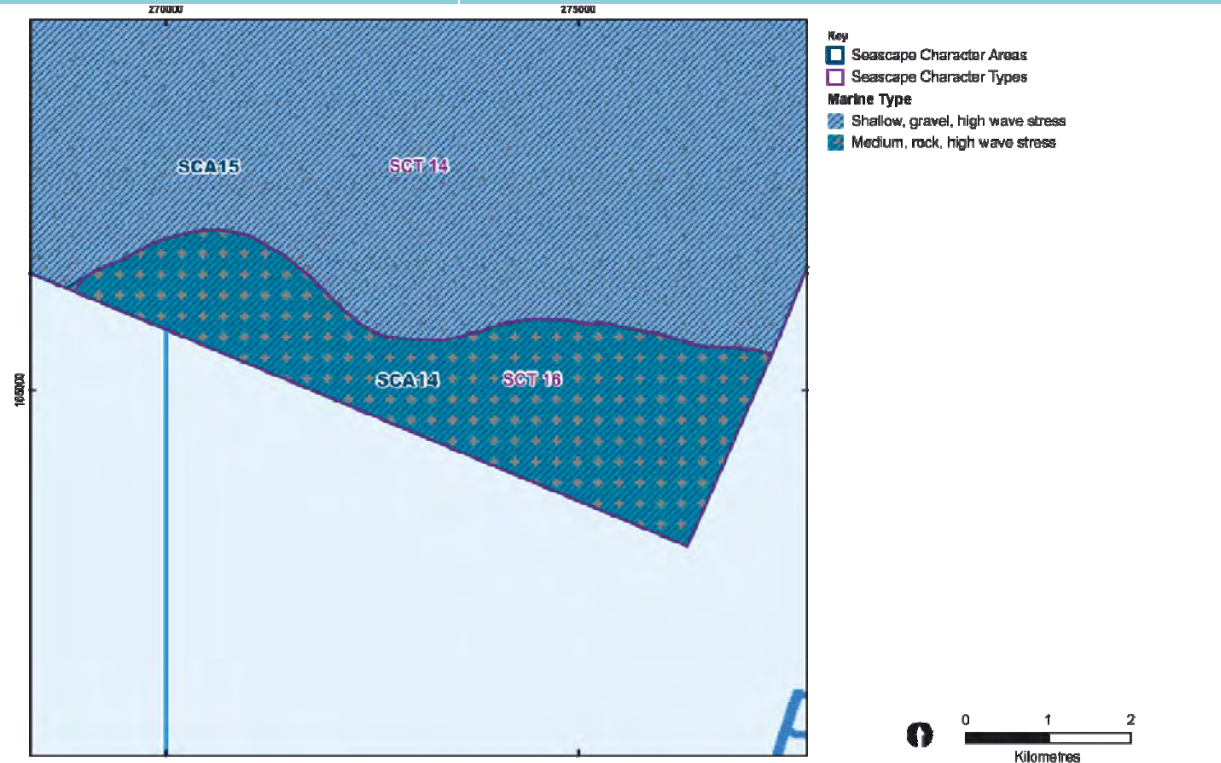
Factors detracting from sensitivity

Presence of development at Porthcawl and associated lighting.

Occasional use by jetskis and other noisy motorised craft.



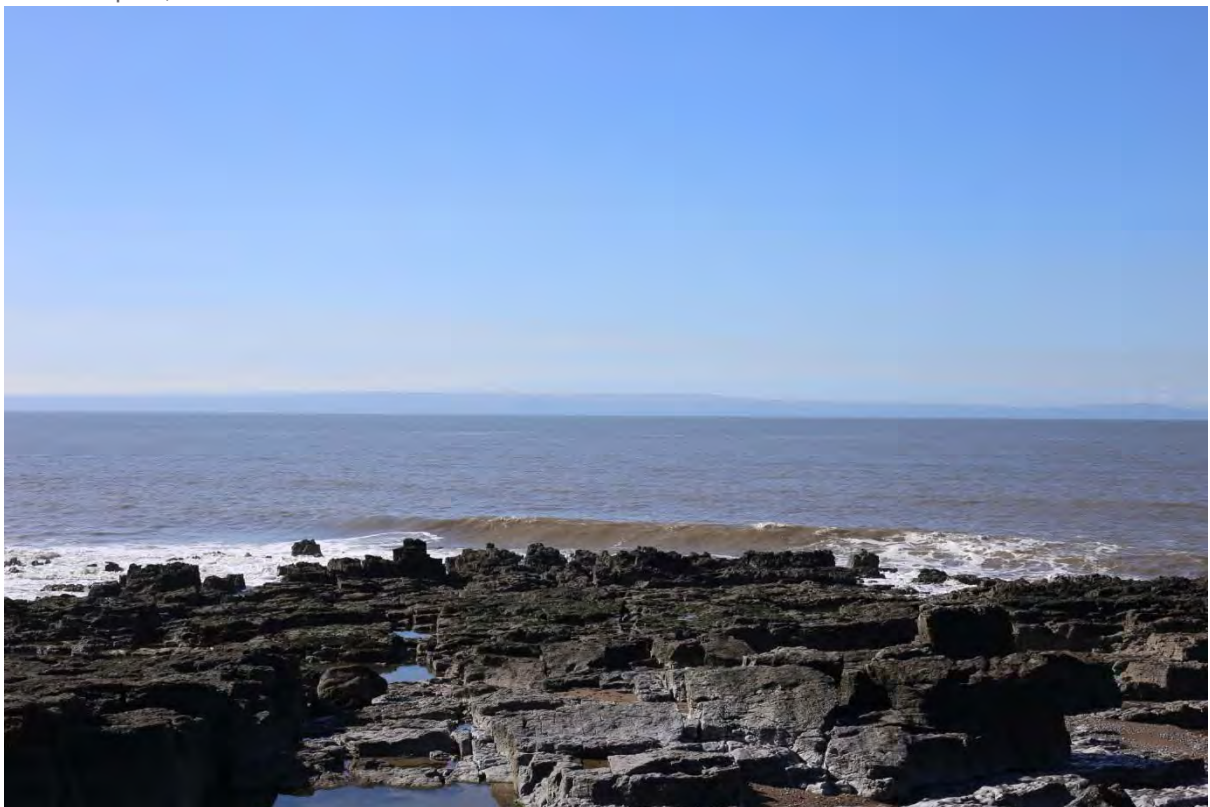
Seascape Character Area No:	14
Seascape Character Area Name:	Bristol Channel- south east



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Seascape Character Assessment - Swansea Bay

Project: Carmarthen Bay, Gower and Swansea Bay Local Seascape Character Assessment
Client Group: CCC, CCS, NPTCBC, BCBC, NRW, Date: August 2017

SCA 14: Bristol Channel- south east



View of the offshore area from near Porthcawl looking towards Exmoor

Summary Description

This area is located offshore in the middle of the Bristol Channel. It is medium depth sloping from 20m to 30m deep with a bedrock seafloor with high wave energy and scoured by strong currents.

Key characteristics

- Open sea in the middle of the Bristol Channel with medium depth water between 20m and 30m deep with a seabed of mudstone bedrock.
- Generally high wave energy and strong tidal currents which scour the seabed of sediment.
- Forms part of the Bristol Channel seaway and was a patrolling ground for Pilot Cutters.
- Wrecks include those travelling from Newport, to the east.
- Sea with simple, open characteristics at a vast scale dominated by swell, waves and winds with a sense of remoteness increasing to the south.
- Contributes to open sea views from Porthcawl and Vale of Glamorgan Heritage Coast.
- The key visible coastal features are Cefn Bryn to the north west, the South Wales coalfield plateau to the north, the Glamorgan Heritage Coast to the north east and Exmoor to the south.
- Tranquillity will be reduced by commercial shipping.

Natural influences

This area lies in the middle of the Bristol Channel south of Nash Bank. It is gently sloping (<1°) southwards to 20-30 m in depth and underlain by Lower Jurassic mudstones striking roughly east-west. Faults in the bedrock are also roughly east-west. Strong tidal currents in the Bristol Channel scour the surface gravel sediment, exposing areas of bedrock on the seafloor. These currents increase in speed as waves funnel up the Severn. Wave and wind energy are high in the inner Bristol Channel (>2.4 m/sec off Nash Point). Sediment is transported eastwards by waves and tidal currents near the shoreline, and westwards in the inner Channel. The main sediment source is reworking of offshore Quaternary sediments.

There are no nature conservation designations within this area.

Cultural influences

The Bristol Channel provides the sea-way to South Wales and to Cornwall and Devon, and that is fed by the Severn and the Avon. There are strong linkages with the maritime trade-routes of western Britain since Prehistory. The character area encompasses the main shipping lane for vessels passing down the Channel to open ocean and, vice versa, inward bound to Cardiff or Bristol. There was also considerable cross-channel trade with north Devon and Cornwall in coal and ores.

The one known shipwreck thought to be associated with this seascape (though the location is unconfirmed) is the *Batavia*, an iron-hulled screw steamship built 1872. At the time of loss, the vessel was owned by W Reeth of Antwerp and was registered at that port. It was carrying a cargo of coal from Newport to Antwerp when it foundered 7 miles north of Foreland Point.

This was a popular patrolling ground for Bristol Channel Pilot Cutters, speedy and highly manoeuvrable vessels that could be handled by a crew of two, which would wait in this area to pick up a ship wanting a pilot.

The west coast paleolandscapes survey identified this area as once being a fairly well characterised landscape of old channels, but with few surviving deposits with archaeological potential.

In terms of navigation, this area of open sea of moderately deep water in the middle of the Bristol Channel has marked tidal flows but has no marked restrictions on navigation.

The area is outside the 6 mile limit so there is only occasional light otter trawling and commercial rod and line fishing. It is used by sailing & motor cruisers on passage, avoiding the Nash Sands to the north.

The western tip of this area is licensed as part of the Bristol Channel Round 3 offshore windfarm development zone. The Atlantic Array wind farm, which was proposed in part of the overall zone, which extends beyond this SCA, has been withdrawn.

Aesthetic, perceptual and experiential qualities

This area has not been visited. It extends into the middle of the Bristol Channel south west of the Glamorgan Heritage Coast to around 17km offshore. The location in the middle of the Channel means that there will be influence of land from both sides. The main features will be Cefn Bryn to

the north west, the coalfield plateau to the north, the Vale of Glamorgan Heritage Coast to the north east but most prominent will be Exmoor to the south, due to its height. At a distance, the land on both sides of the Bristol Channel will appear as a low single dimensional line on the horizon with simple colours.

The sea has a simple, consistent and unified character at a vast scale and a sense of openness, isolation and exposure. Its qualities are determined entirely by the natural forces of water, through swell and waves, and wind. The Bristol Channel is narrowing here and the tidal flows are very strong. Allied to exposure to the south westerlies the sea is likely to feel threatening and worse in poor weather conditions. There is a strong likelihood of tranquillity and sense of wildness and remoteness in this open sea.

There will be occasional leisure craft avoiding Nash Bank to the north and there will be many views of commercial vessels plying the Channel through this area or mainly to the south.

Cultural benefits and services							
The area contributes to natural heritage in the form of an unspoilt marine area of sea and seabed, contributing to unbroken views from the coast across the Bristol Channel towards Exmoor. It contributes towards leisure and recreation services in terms of its use by cruising/sailing. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					

Summary

- Sediment transport by tidal currents in the Bristol Channel.
- Potential tidal stream energy would be likely to have effects on character through the introduction of infrastructure into the area ie seabed turbines.
- Potential tidal lagoon development to the north would have a significant effect on seascape character, affecting views to and from the Glamorgan Heritage Coast and from Porthcawl and the associated coast.
- An offshore windfarm in the Bristol Channel Round 3 licensed area would change the feeling of remoteness and would affect views to the west, out to sea and potentially block views to Lundy.

Key sensitivities

Factors contributing to sensitivity

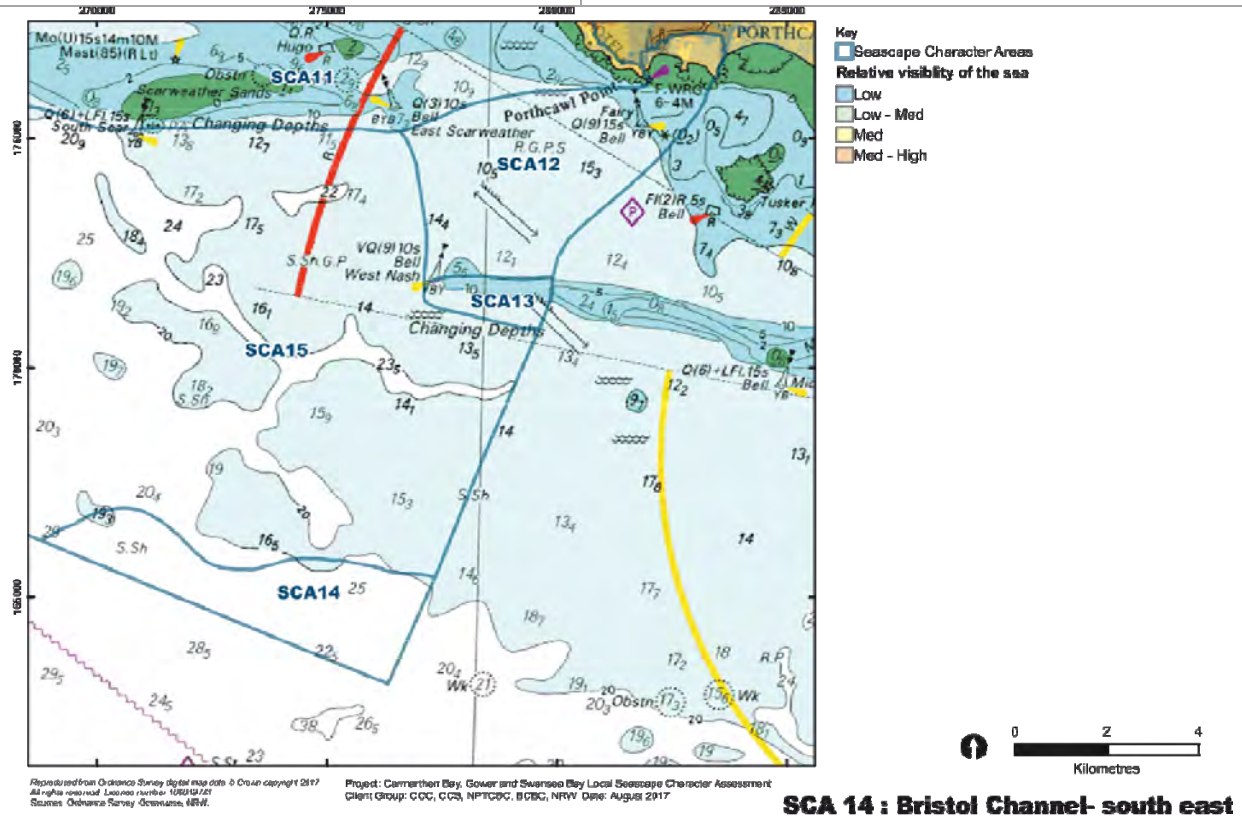
The open, exposed, wild, unspoilt character of the area with views towards Gower, Exmoor and Glamorgan Heritage Coast.

Forms part of the open setting of the Glamorgan Heritage Coast to the north east/east contributing to the essentially unspoilt natural marine character of the area.

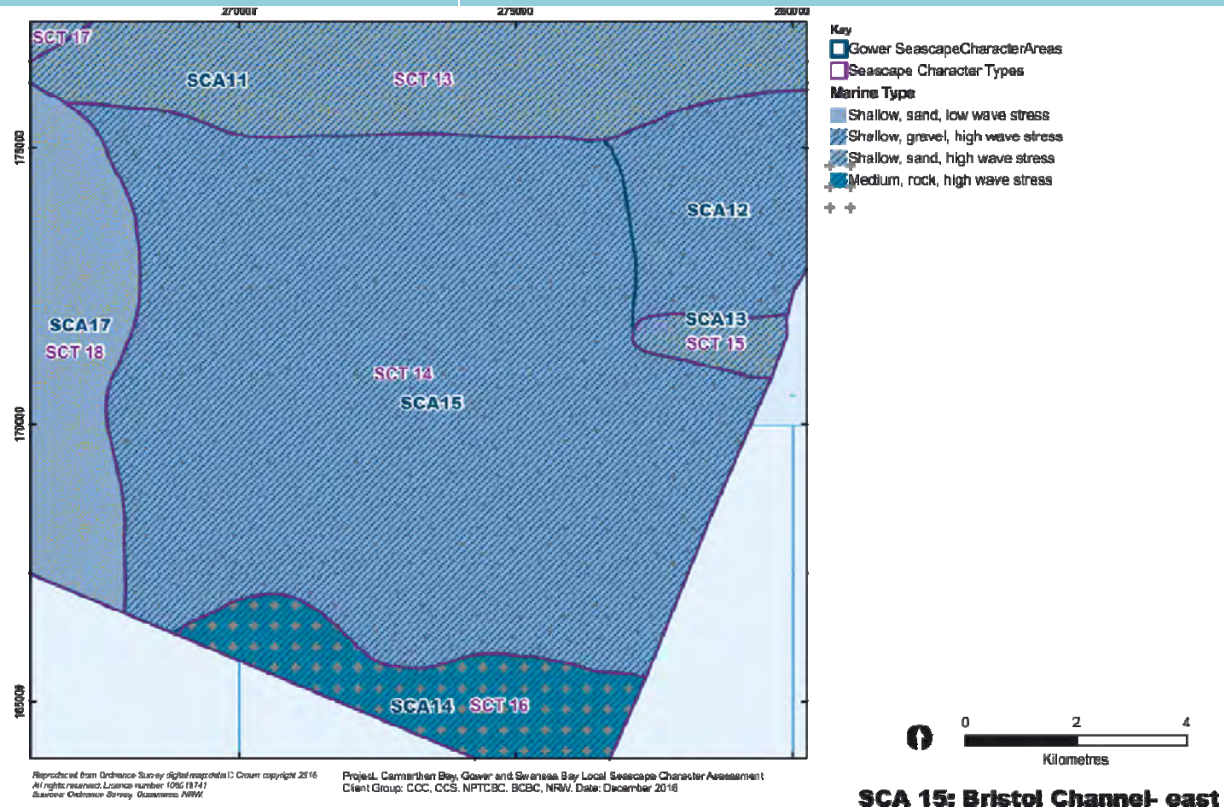
Users of the Glamorgan Heritage Coast, the Wales Coast Path and the promenade at Porthcawl are sensitive receptors.

Factors detracting from sensitivity

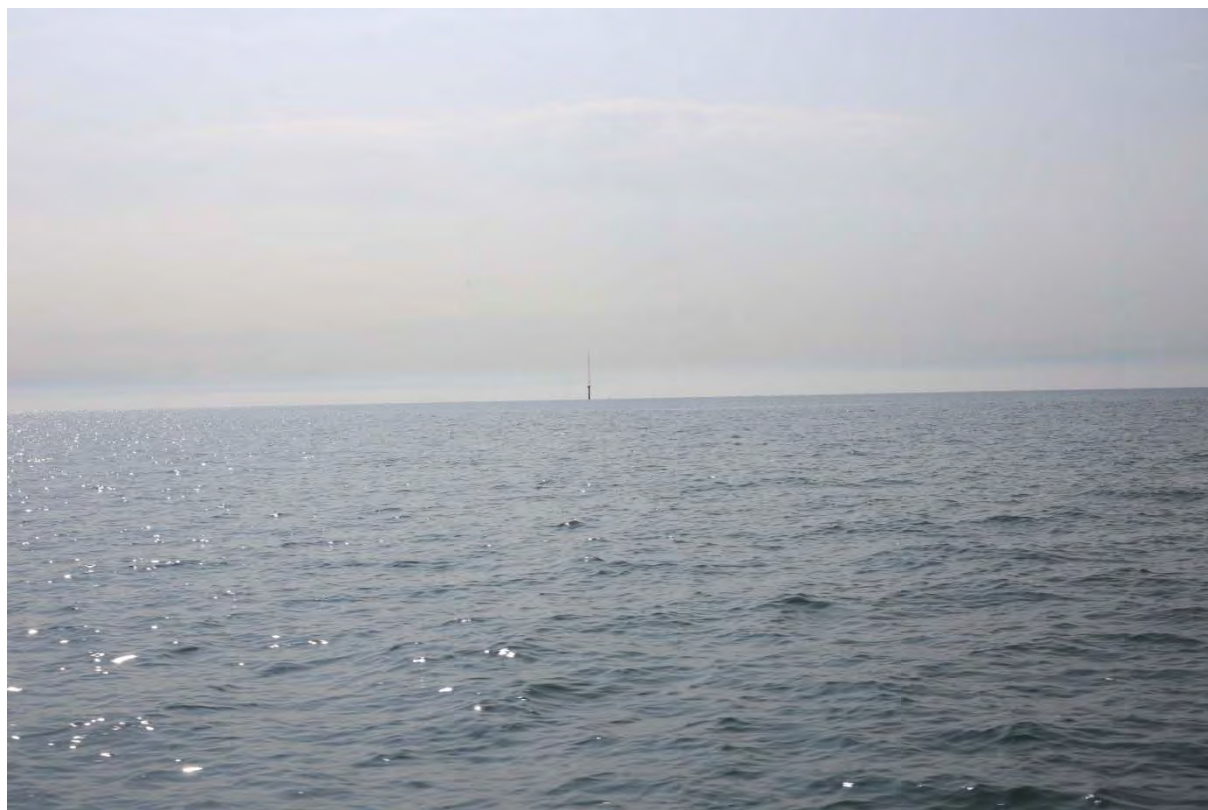
Use by shipping.



Seascape Character Area No:	15
Seascape Character Area Name:	Bristol Channel- east



SCA 15: Bristol Channel- east



View across the area from SCA11 past the now removed Scarweather Sands monitoring mast.

Summary Description

This area is located offshore south of Scarweather Sands, extending out into the middle of the Bristol Channel. It is medium depth sloping from 15m to 30m deep with a gravel and sandy gravel seafloor with high wave energy and strong currents.

Key characteristics

- Open sea extending south of Scarweather Sands and West Nash towards the middle of the Bristol Channel with medium depth water between 15m and 30m deep with a seabed of gravel and sandy gravel.
- Generally high wave energy and strong tidal currents move coarse sediments predominantly eastwards.
- Forms part of the Bristol Channel seaway.
- Wrecks include those involved in the limestone trade from Aberthaw, to the east.
- Sea with simple, open characteristics at a vast scale dominated by swell, waves and winds with a sense of remoteness increasing to the south.
- Contributes to open sea views from Porthcawl and Vale of Glamorgan Heritage Coast.
- Views toward Lundy to the south west.
- The key visible coastal features are Cefn Bryn to the north west, the South Wales coalfield plateau to the north, the Glamorgan Heritage Coast to the north east and Exmoor to the south.
- Tranquillity will be reduced by commercial shipping.

Natural influences

Offshore of Scarweather Sands and West Nash, the shelf slopes gently (<1°) south westwards, ~15-30 m depth. The underlying seafloor bedrock is roughly west-east striking Lower Jurassic mudstones, cut by faults. The overlying seafloor sediment is gravel and sandy gravel. The area has high wave energy, exposed to the prevailing south westerly winds and waves, and a high tidal range (>10 m). Strong tidal currents move coarser sediment predominantly eastwards, carried in suspension and by traction.

There are no nature conservation designations within this area.

Cultural influences

The SCA forms part of the Bristol Channel that provides the sea-way to South Wales and to Cornwall and Devon, and that is fed by the Severn and the Avon. There are strong linkages with the maritime trade-routes of western Britain since Prehistory. The northern part of the character area includes the shipping lane passing along the southern side of the Scarweather Sands as they open out to the sea.

Known wrecks include the *Sir William Molesworth*, a wooden sailing smack or ketch built by Withel at Padstow in 1850 and registered there until it was transferred to Cardiff, and the *Ann Maria*, a 31 ton wooden sailing smack built in 1843, lost in 1889, both of which were engaged in the Aberthaw limestone trade. Aberthaw lime is famous for its qualities of setting under water, essential for harbour works and lighthouses. From further afield was the *Millbay*, a wooden schooner built in 1833 at Plymouth but at the time of loss in 1882, owned by Patrick Christopher of Dungarvan.

The Bristol Channel is increasingly recognised as a seascape with significant potential for understanding of prehistory and the evolution of now-submerged areas since the last Ice Age. The west coast paleolandscapes survey identified this area as once being floodplain and an old river channel to the east, with medium/high potential for survival of deposits, but with a pocket of high potential. Where possible, deposits should be preserved in situ.

In relation to navigation, this is an area of open sea of moderate depth extending towards the centre of the Bristol Channel. As such it has few restrictions on navigation apart from tidal flows although overfalls are defined just south of Nash Bank which is marked by the West Nash cardinal mark. To the north, the area is bounded by Scarweather Sands which dry in parts and are marked by cardinal marks and lights at West Scar (with Racon), South Scar and East Scarweather.

The area lies either side of the 6 mile limit and there is only occasional light otter trawling and commercial rod and line fishing. Species include bass in particular with tope in the summer and rays, conger, whiting (and dogfish) in winter. Long lines are also used and whelk potting has been recorded to the west. There is also occasional recreational rod and line fishing.

This 'offshore' area is used by sailing & motor cruisers on passage.

The south western part is licensed as part of the Bristol Channel Round 3 offshore windfarm development zone. The Atlantic Array wind farm, which was proposed in part of the overall zone, which extends beyond this SCA, has been withdrawn.

Aesthetic, perceptual and experiential qualities

This area has not been visited. It extends into the middle of the Bristol Channel from around 5km south east of Porthcawl at its closest point extending to around 16km offshore, and so it would be expected that there would be a range of influence of the coast. Close in the land has some influence reducing further offshore to higher land being only apparent in clearer weather. The main features visible will be Cefn Bryn to the north west, the coalfield plateau to the north east, the Vale of Glamorgan Heritage Coast to the north east and the Exmoor coast to the south. At a distance the land on both sides of the Bristol Channel will generally appear as a low single dimensional line on the horizon with simple colours. There will be views toward Lundy to the south west in clear weather.

The sea has a simple, consistent and unified character at a vast scale and a sense of openness, isolation and exposure. Its qualities are determined entirely by the natural forces of water, through swell and waves, and wind. The area is exposed to the south westerlies and in poor weather conditions the sea is likely to feel threatening. There is a strong likelihood of tranquillity and sense of wildness and remoteness in this open sea.

There will be occasional leisure craft avoiding Nash Bank to the east and there will be many views of commercial vessels plying the Channel, mainly to the south and west.

Cultural benefits and services

The area contributes to natural heritage in the form of an unspoilt marine area of sea and seabed, contributing to unbroken views from the coast across the Bristol Channel towards Exmoor. It contributes towards leisure and recreation services in terms of its use by cruising/sailing. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature.

Forces for change

Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					

Summary

Sediment transport by tidal currents in the Bristol Channel.

Potential tidal lagoon development would have a significant effect on seascape character, enclosing the sea and affecting the local area and views to and from the Glamorgan Heritage Coast and from Porthcawl and the associated coast.

Potential tidal stream energy would be likely to have effects on character through the introduction of infrastructure into the area ie seabed turbines.

An offshore windfarm in the Bristol Channel Round 3 licensed area would change the feeling of remoteness and would affect and block views to Lundy.

Key sensitivities

Factors contributing to sensitivity

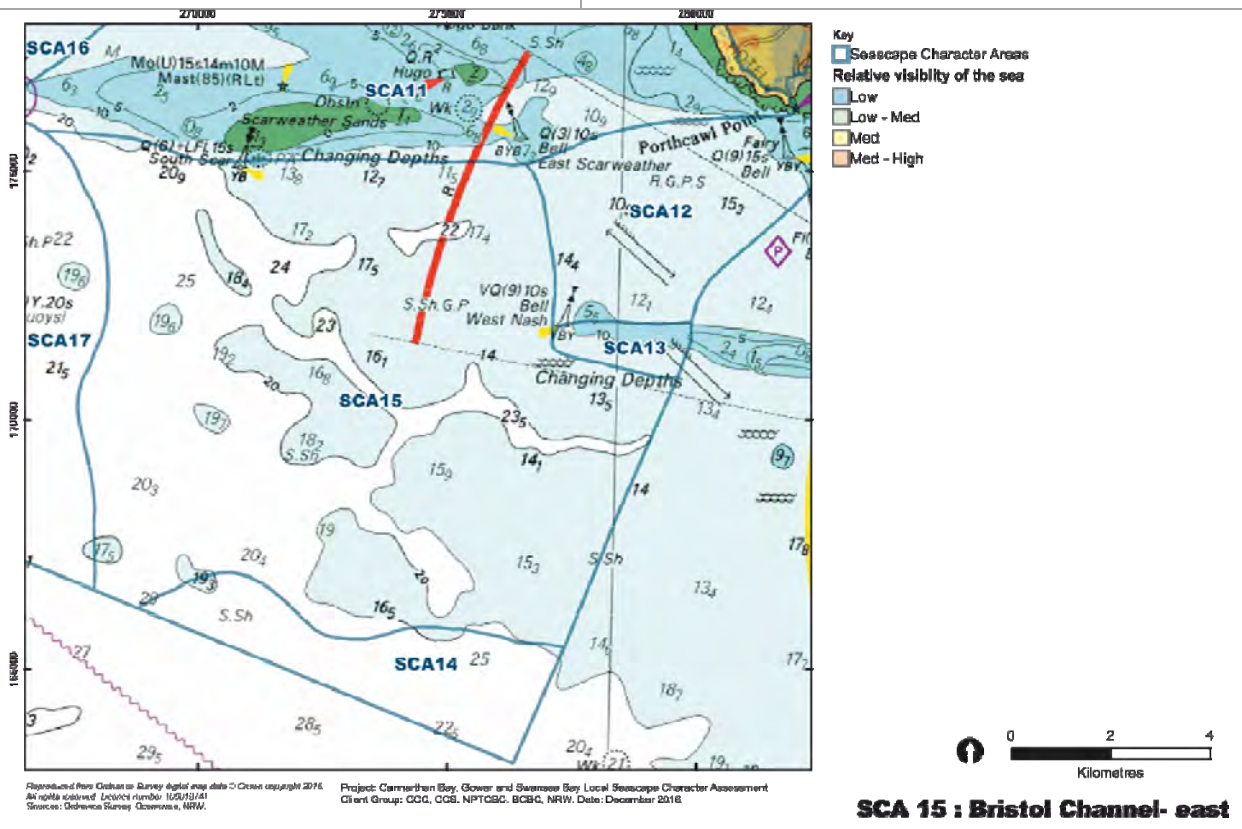
The open, exposed, wild, unspoilt character of the area with views towards Gower, Exmoor and Glamorgan Heritage Coast.

Forms part of the open setting of the Glamorgan Heritage Coast to the east contributing to the essentially unspoilt natural marine character of the area.

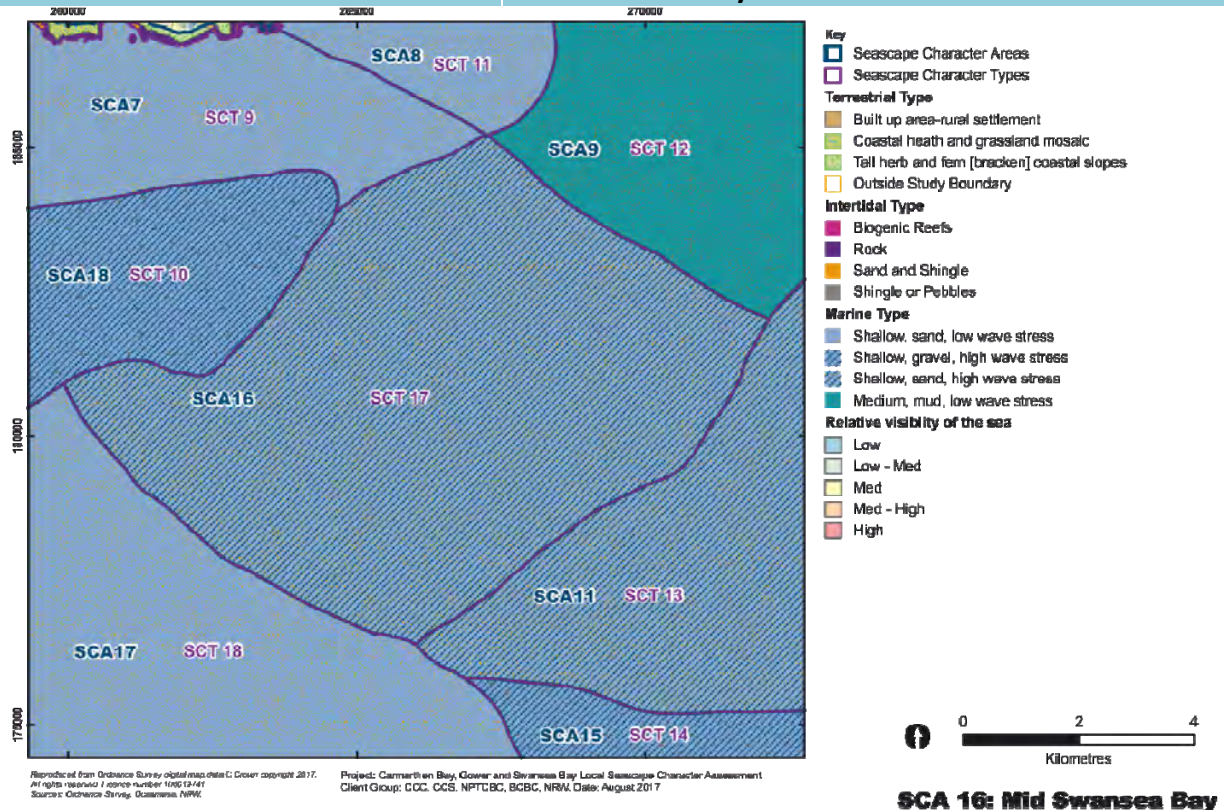
Users of the Glamorgan Heritage Coast, the Wales Coast Path and the promenade at Porthcawl are sensitive receptors.

Factors detracting from sensitivity

Occasional use by shipping.



Seascape Character Area No:	16
Seascape Character Area Name:	Mid Swansea Bay



SCA 16: Mid Swansea Bay



View into Swansea Bay where Kilvey Hill forms a strong backcloth and Meridian Tower is a noticeable feature.

Summary Description

The SCA is open sea south of Swansea Bay with medium depth waters, 15-20m depth, with a seabed of slightly gravelly sand to the south changing to muddy sand to the north. The area is used by commercial vessels and leisure craft approaching the ports and harbours of Swansea, Port Talbot and Neath. A dumping ground/spoil ground is licensed in the middle of the area.

Key characteristics

- Open sea extending south from Swansea Bay with medium depth waters, 15-20m depth, reducing slightly towards White Oyster Ledge in the western part of the area, all with a seabed of slightly gravelly sand to the south changing to muddy sand to the north.
- White Oyster Ledge slopes from the north west into the SCA.
- Medium wave energy but strong tidal currents keep sediment in suspension.
- Wrecks associated with trade with Swansea but also along the Bristol Channel, such as the pilot cutter, *David*.
- Forms part of the approaches to Swansea Bay and its various ports and harbours and so has a mix of commercial and leisure craft.
- Sea with simple, open characteristics at a vast scale dominated by swell, waves and winds with a sense of remoteness increasing to the south and west.
- Contributes to open sea views from Swansea Bay and southern Gower.
- The key visible coastal features are Cefn Bryn and cliffs to the north west, Swansea and its settled hill backcloth to the north and the coalfield plateau to the north east with Port Talbot steelworks.
- Tranquillity is strong but reduced by visible development on the coast.

Natural influences

This area lies north west of Scarweather Sands where the shelf slopes gently (<1°) south westwards from 15-20m depth. The underlying bedrock of Upper Carboniferous mudstones overlain by Lower Jurassic mudstones and marls/limestones strikes roughly west-east. Overlying sediment fines towards Swansea Bay to the north from slightly gravelly sand to muddy sand. Wave energy is medium and higher towards the east. The high tidal range and tidal currents keep sediment in suspension. Storms can shift sediment from outer parts of the bay towards the eastern side, where it is reworked by longshore and coastal processes. White Oyster Ledge slopes from the north west into the SCA.

There are no nature conservation designations within this area.

Cultural influences

The SCA lies on the approaches to Swansea Bay and to the mouths of the Tawe, the Neath, the Afan and the Kenfig. As such it has formed part of the long-established trade route between South Wales and Cornwall and north Devon. As such there are wrecks associated with it.

A known shipwreck is the *David*, a pilot cutter built by J & J Hooper at Pill in 1872, registered at Cardiff in 1882, which foundered after a collision with the German registered steamship *Marie Therese*.

The west coast paleolandscapes survey identified this area as once being high ground to the north and floodplain to the south, with medium/high potential for survival of deposits. Where possible, deposits should be preserved in situ.

The western portion of this seascape area encompasses the southern third of shallows surrounding the 'White Oyster ledge' shown on an historic admiralty chart, suggesting an extensive oyster bed. The oyster trade is described by authors such as Edward Lhuyd and Francis Kilvert.

In terms of navigation, this area of open sea of moderate depth is on the edge of Swansea Bay and on the approaches to the ports. The southern extent of the shallower water on White Oyster Ledge is marked by a cardinal mark. A dumping ground/spoil ground is licensed in the middle of the area. There is a yellow marker buoy just north of this.

Commercial and recreational rod and line fishing are prevalent throughout. Species include bass in particular with tope in the summer and rays, conger, whiting (and dogfish) in winter. The area around White Oyster Ledge is popular. Light otter trawling is carried out along with whelk potting.

Sailing & motor cruisers on passage tend to run through this area to access Swansea Bay and Gower Coast to the west, pushed offshore by Scarweather Sands and other shoals to the east.

Aesthetic, perceptual and experiential qualities

This SCA lies on the edge of Swansea Bay, 4km south east of Mumbles Head at its closest point extending to just over 10km offshore, and so there is a range of influence of the coast. The land has some influence in the majority of weather and visibility conditions. The main features are Cefn Bryn in Gower to the north west, the settled hills of Swansea to the north, the coalfield plateau to the north east with Port Talbot steelworks in the middle ground and the Exmoor coast visible in clearer conditions further to the south. Whilst some detail is apparent on the Welsh coast, such as individual buildings such as Meridian Tower and the steelworks structures, Exmoor appears as a low single dimensional line on the horizon with simple colours.

The sea has a simple, consistent and unified character at a vast scale and a sense of openness, isolation and exposure. Its qualities are determined entirely by the natural forces of water, through swell and waves, and wind. The area is exposed to the south westerlies and in poor weather conditions the sea is likely to feel threatening. There is tranquillity and sense of wildness in this relatively open sea although this is reduced to an extent by intervisibility with the settled coast.

There are a number of leisure craft and occasional views of commercial vessels approaching the ports to the north as well as along the Bristol Channel to the south, so this SCA does not feel remote.

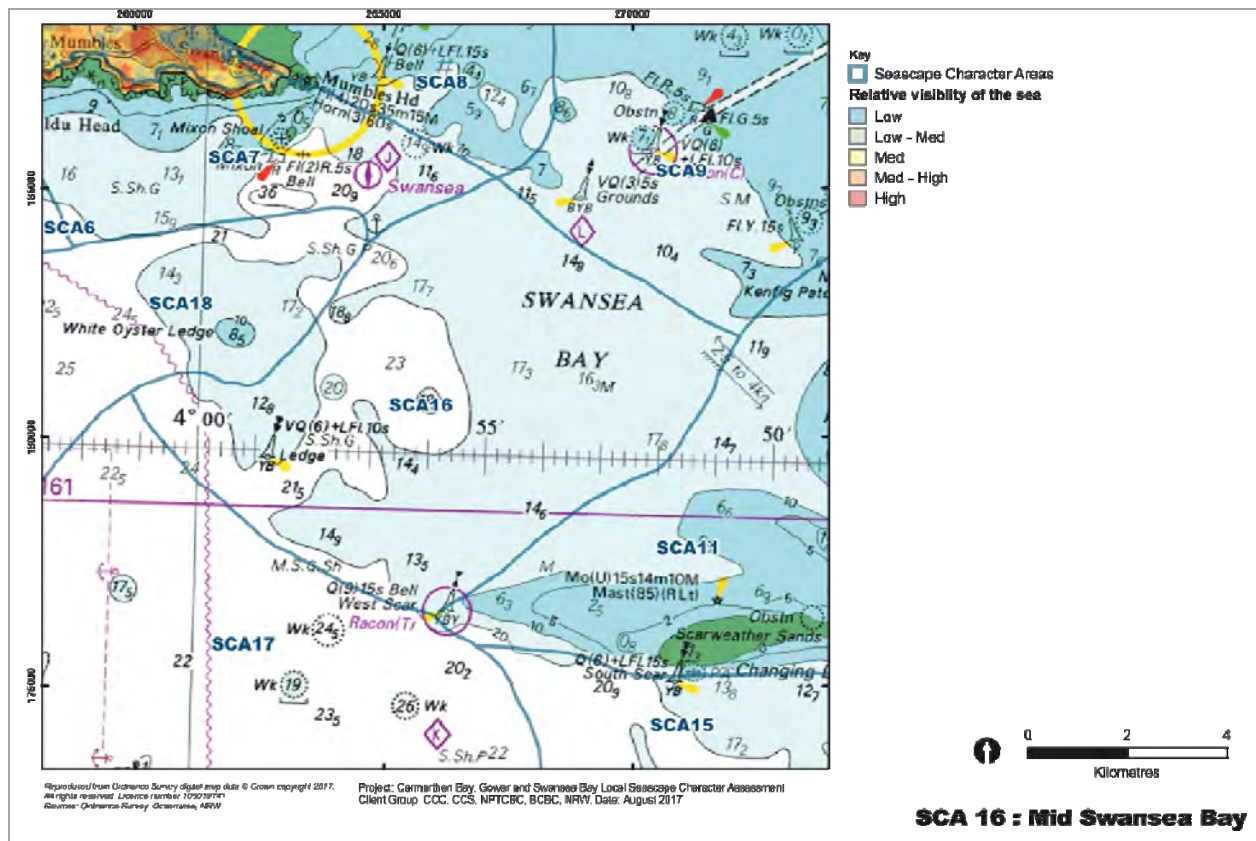
Cultural benefits and services

The area contributes to natural heritage in the form of a virtually unspoilt marine area of sea and seabed, contributing to unbroken views from the coast across the Bristol Channel towards Exmoor and towards Gower. It contributes towards leisure and recreation services in terms of its use by cruising/sailing. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature.

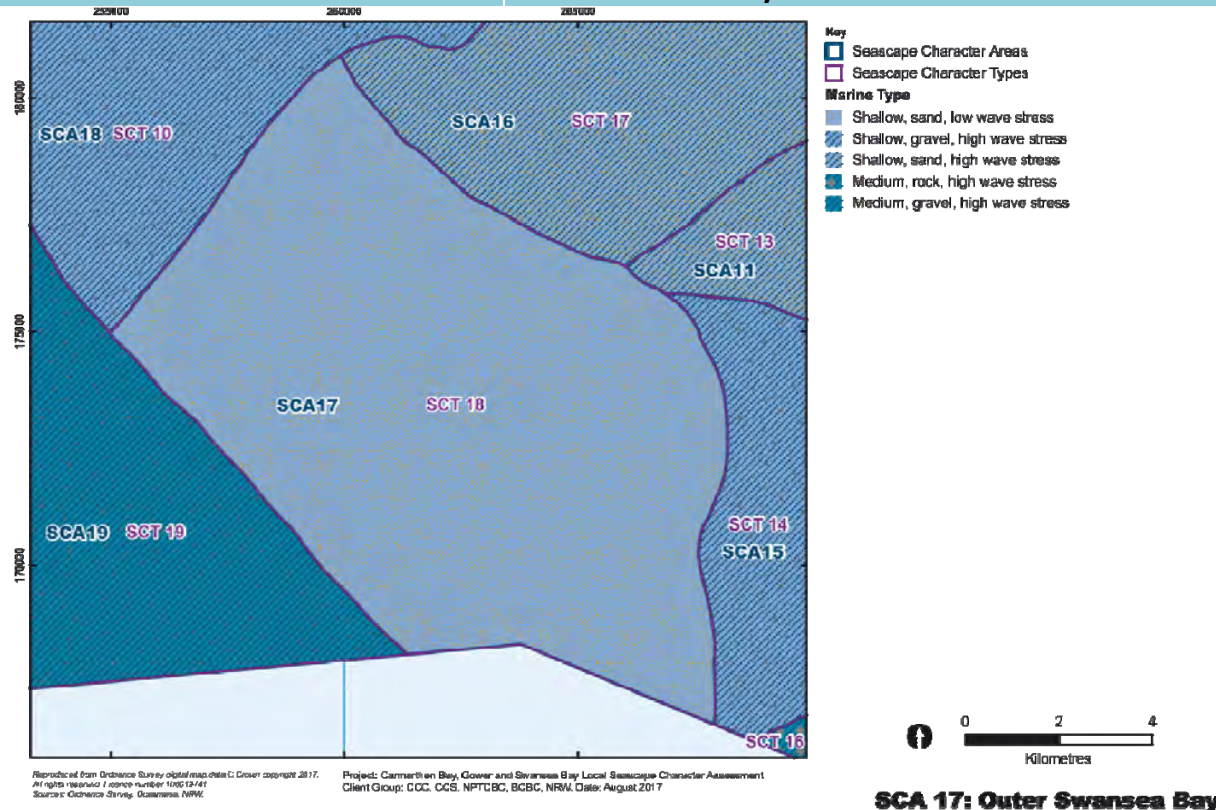
Forces for change

Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							

Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					
Summary							
<ul style="list-style-type: none"> • Potential aquaculture may have a positive or negative effect on biodiversity depending on management and may have an effect on seascape character if there are permanent surface structures. • Swansea Bay tidal lagoon, if implemented would be located to the north and would be very large scale protruding 3.5km into Swansea Bay. Views from the SCA to the beaches would be interrupted by the high rock armour sea walls and the offshore visitor centre and turbine housing will be noticeable dividing the bay into three. Overall, it would adversely affect the seascape character and views to Swansea Bay. In addition the dumping ground/spoil ground would have to be moved to accommodate the lagoon which may add to disruption of the area and its seabed. • Potential further tidal lagoon development could have a significant effect on seascape character, enclosing the sea and affecting the local area and views to and from Gower AONB and the associated coast. • Potential tidal stream energy would be likely to have effects on character through the introduction of infrastructure into the area ie seabed turbines. • Further wind energy developments on the South Wales coalfield plateau to the north east would impact on views and tranquillity. • A conditional licence for an offshore gasification trial has now lapsed. • Any changes to the Port Talbot steelworks could have a visual effect on the SCA. • Any changes to the licensed area for disposal of dredged spoil. 							
Key sensitivities							
Factors contributing to sensitivity				Factors detracting from sensitivity			
<p>The open, exposed, wild, unspoilt character of the area with views towards Gower, Exmoor and Glamorgan Heritage Coast.</p> <p>Forms part of the open setting of Gower to the north west contributing to the essentially unspoilt natural marine character of the area.</p> <p>Users of Gower, the Wales Coast Path and the promenades at Swansea and Aberafan are sensitive receptors.</p>				<p>Use by shipping approaching and leaving Port Talbot, Swansea and Briton Ferry.</p>			



Seascape Character Area No:	17
Seascape Character Area Name:	Outer Swansea Bay



View across the Bristol Channel in slightly hazy weather- note the cargo ship heading up towards Portishead or Cardiff

Summary Description

This area is located offshore south of Gower and Swansea Bay, extending out into the middle of the Bristol Channel. It is medium depth sloping from 20m to 30m deep with a gravelly sand seafloor with low wave energy and strong currents.

Key characteristics

- Open sea extending from west of Scarweather Sands to the middle of the Bristol Channel with medium depth water between 20m and 30m deep with a seabed of gravelly sand.
- Generally low wave energy but strong tidal currents keep sediment in suspension.
- Forms part of the approaches to Swansea Bay and its various ports and harbours, with several holding anchorages.
- Wrecks mainly relate to ships travelling to or from the ports, either foundering or through enemy action in the World Wars.
- Sea with simple, open characteristics at a vast scale dominated by swell, waves and winds with a sense of wildness and remoteness increasing to the south.
- Contributes to open sea views from Swansea Bay and southern Gower.
- The key visible coastal features are Cefn Bryn to the north, the South Wales coalfield plateau to the north east and Lundy and the North Devon coast to the south.
- Tranquillity will be reduced by commercial shipping.

Natural influences

This area lies south west of Scarweather Sands and here the shelf slopes gently (<1°) south westwards from 20-30m depth. The underlying bedrock of Lower Jurassic mudstones and marls/limestones strikes roughly west-east. Overlying sediment is predominantly slightly gravelly sand. Wave energy is mostly low. The high tidal range and tidal currents keep sediment in suspension. Storms can shift sediment from outer parts of the bay towards the eastern side, where it is reworked by longshore and coastal processes.

There are no nature conservation designations within this area.

Cultural influences

This SCA forms part of the Bristol Channel on the approaches to Swansea Bay and thence to the mouths of the Tawe, the Neath, the Afan and the Kenfig. As such it has formed part of the long-established trade route between South Wales and Cornwall and north Devon. It includes the shipping channel avoiding Scarweather Sands and Nash Sands. However, the business of this SCA is indicated by the vessels which collided in it.

The earliest recorded wreck is the John and Mary, a wooden sloop built in Dumfriesshire in 1818, lost in 1852 carrying a cargo of culm. Other wrecks, typical of trades here, would have been the *Queen of Devon*, a wooden brig built by W Shilston, Plymouth, in 1868, which collided with a steamship whilst carrying a cargo of copper ore from London to Swansea on 11 March 1885, and the wooden schooner *George Canning*, built in 1827, which foundered en route from Neath Abbey to Watchet in 1899. The most recent wreck, the *GA Savage*, a steel-hulled steamship, is believed to have been torpedoed on 11 March 1917 carrying a cargo of pitch from Workington to Swansea.

There is a wreck of a lightship sunk in 1942 off West Scar adjacent where it was moored, after being run down by a minesweeper, HMS Rosette, a converted trawler. The last replacement light vessel on this station, ordered in April 1945 and built by Phillip & Son, Dartmouth in 1947, was sold to the Musée de Bateau at Douarnenez, where it is preserved.

The west coast paleolandscapes survey identified the area as floodplain, with the potential for surviving deposits as medium/high to the south and medium to the north. There is some possibility of survival of deposits, particularly in pockets.

In relation to navigation, this area of open sea is generally deep water with few features. There are a number of defined holding anchorages on the approaches to Swansea and Port Talbot, one for deep water. To the north east, the area is bounded by the end of Scarweather Sands marked by the cardinal mark and light at West Scar (with Racon). There is only one pair of special marks south of West Scar.

The area lies mainly outside the 6 mile limit to the south so commercial and recreational rod and line fishing tend to be further north. Light otter trawling is carried out along with whelk potting.

This 'offshore' area is used by sailing & motor cruisers on passage avoiding Scarweather Sands to

the north east.

The southern part is licensed as part of the Bristol Channel Round 3 offshore windfarm development zone. The Atlantic Array wind farm, which was proposed in part of the overall zone, which extends beyond this SCA, has been withdrawn.

Aesthetic, perceptual and experiential qualities

This area has not been visited. It lies near the middle of the Bristol Channel, 6.5km south east of Pwlldu Head at its closest point extending to 19km offshore, and so it would be expected that there would be a range of influence of the coast. Close in the land has some influence reducing further offshore to higher land being only apparent in clearer weather. The main features will be Cefn Bryn in Gower to the north west, the coalfield plateau to the north east and the Exmoor coast to the south. At a distance the land on both sides of the Bristol Channel will appear as a low single dimensional line on the horizon with simple colours.

The sea has a simple, consistent and unified character at a vast scale and a sense of openness, isolation and exposure. Its qualities are determined entirely by the natural forces of water, through swell and waves, and wind. The area is exposed to the south westerlies and in poor weather conditions the sea is likely to feel threatening. There is a strong likelihood of tranquillity and sense of wildness and remoteness in this open sea.

The number of leisure craft will be limited but there may be occasional views of commercial vessels approaching the ports to the north as well as along the Bristol Channel to the south.

The area would be part of the unspoilt sea views from Southern Gower.

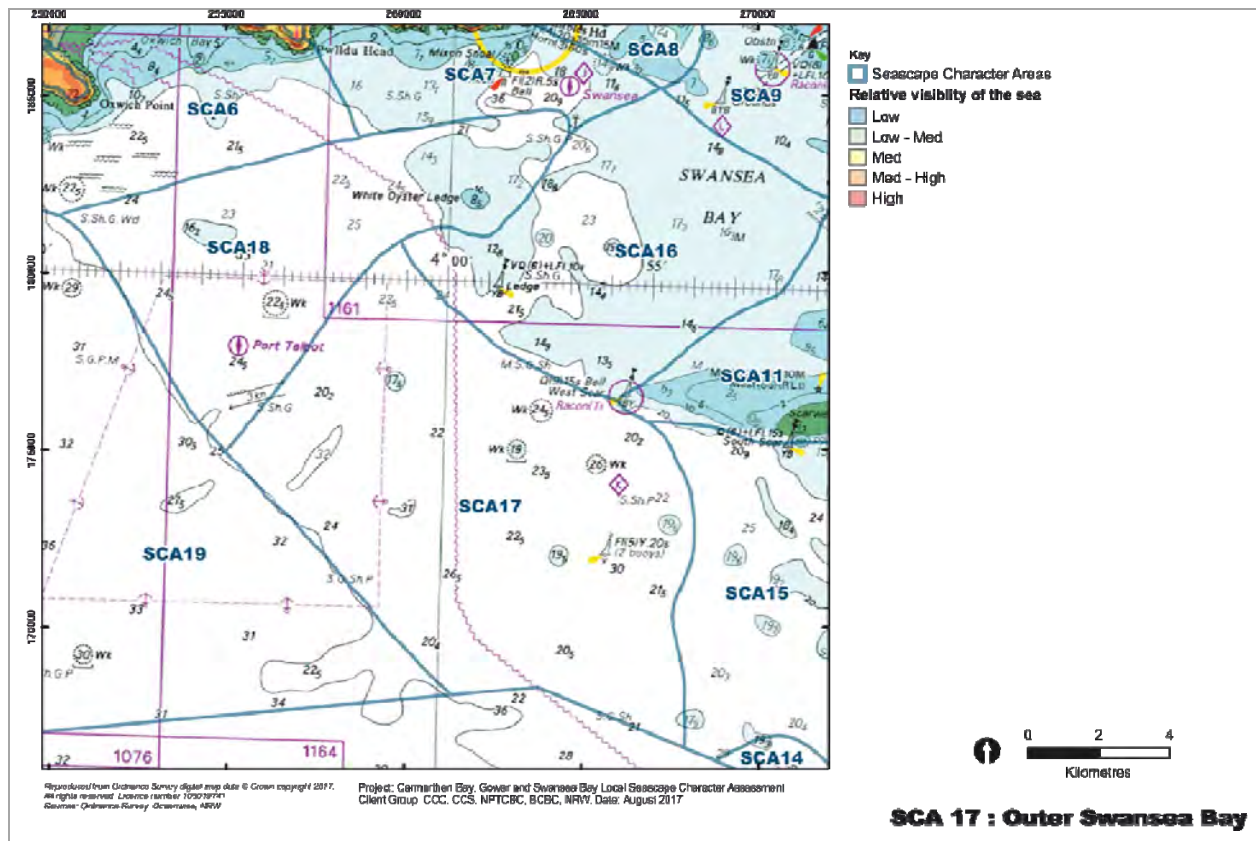
Cultural benefits and services

The area contributes to natural heritage in the form of an unspoilt marine area of sea and seabed, contributing to unbroken views from the coast across the Bristol Channel towards Exmoor and towards Gower. It contributes towards leisure and recreation services in terms of its use by long distance cruising/sailing. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature.

Forces for change

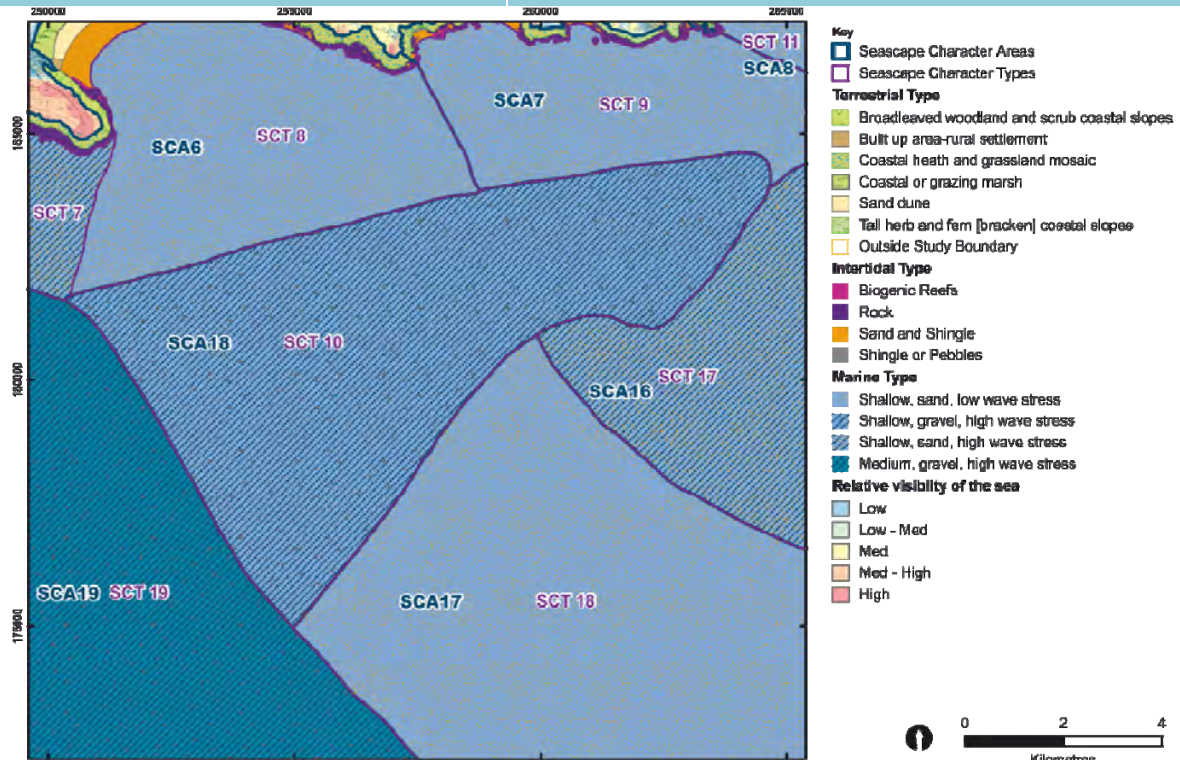
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							

Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					
Summary							
<ul style="list-style-type: none"> • Sediment transport along and around the coast. • Potential further tidal lagoon development to the north and east could have an effect on seascape character and views to and from Gower AONB and the associated coast. • Potential tidal stream energy to the east could have effects on character through the introduction of infrastructure into the area ie seabed turbines. • An offshore windfarm in the Bristol Channel Round 3 licensed area would change the feeling of remoteness and would affect and block views to Lundy and the North Devon coast. 							
Key sensitivities							
Factors contributing to sensitivity				Factors detracting from sensitivity			
<p>The open, exposed, wild, unspoilt character of the area with views towards Gower, Exmoor and Glamorgan Heritage Coast.</p> <p>Forms part of the open setting of Gower to the north west contributing to the essentially unspoilt natural marine character of the area.</p> <p>Users of Gower, the Wales Coast Path and the promenades at Swansea and Aberafan are sensitive receptors.</p>				<p>Use by shipping along the Bristol Channel and approaching and leaving the ports in Swansea Bay.</p>			



SCA 17 : Outer Swansea Bay

Seascape Character Area No:	18
Seascape Character Area Name:	Offshore Oxwich Point to Mumbles Head



SCA 18: Offshore Oxwich Point to Mumbles Head



View towards Swansea Bay with the Mumbles and the lighthouse the main features in the middle ground. In the bay, Kilvey Hill forms a strong backcloth and Meridian Tower is a noticeable feature.



Leisure fishing around White Oyster Ledge

Summary Description

This linear area is located south of Gower coastal waters on the approaches to Swansea Bay. It is medium depth of 20-30m with a gravel seafloor and high wave energy and strong currents. The White Oyster Ledge to the east is shallower but there is a deeper water channel between this and the Mixon Shoal to the north. The area is used by leisure boats and fishing.

Key characteristics

- Open sea extending along south Gower just offshore from the coastal waters with medium depth waters 20-30m depth, apart from the shallows around White Oyster Ledge in the eastern part of the area, all with a seabed of gravel.
- Generally high wave energy and strong tidal currents, with rough seas when the wind is over the tide.
- Wrecks, many associated with trade with Swansea but also ships lost while passing along the coast.
- A deeper water channel and number of defined holding anchorages lie on the approaches to Swansea between the shoals of White Oyster Ledge and the Mixon Shoal to the north.
- Used by leisure/fishing boats primarily.
- Sea with simple, open characteristics at a vast scale dominated by swell, waves and winds with a sense of wildness and remoteness increasing to the south and west.
- Contributes strongly to open and unspoilt sea views from southern Gower including from the Wales Coast Path.
- The key visible coastal features are Cefn Bryn and cliffs to the north, the settled hills of Langland to the north east, and the coalfield plateau to the east with Port Talbot steelworks.
- Tranquillity is strong but reduced by visible development on the coast.

Natural influences

This area lies just offshore of the southern Gower Coast from Oxwich Point to Mumbles Head. Here the shelf slopes gently ($<1^\circ$) southwards from 20-30m depth except for the shoals of White Oyster Ledge sand bar south of Mumbles which shallow to $<10\text{m}$. The underlying bedrock of east-west striking Upper Carboniferous mudstones/sandstones is overlain to the south by Triassic mudstones. The sea floor sediment is gravel, the eastern portion of a tongue of gravel that extends east-west

into Carmarthen Bay, and which coarsens southwards into the Bristol Channel. Wave energy is high, and with the high tidal range of >8 m, tidal currents transport sediment eastwards in suspension. Rough seas can occur when the wind is over the tide.

There are no nature conservation designations within this area.

Cultural influences

This area forms part of the Bristol Channel that provides the sea-way to South Wales and to Cornwall and Devon, and that is fed by the Severn and the Avon. There are strong linkages with the maritime trade-routes of western Britain since Prehistory. The historic shipping route to or from Swansea and Mumbles Road runs along the northern edge of the area, between the White Oyster Ledge and Mixon shoal.

Known shipwrecks indicate the trades which went on within this SCA. Two which were serving the industries of the immediate hinterland were the *Benamain* or *Beninin*, a small coaster which sank in 1883 carrying copper ingots, copper sheet, tin plate and fire bricks (from which a copper ingot marked 'V&S' for Vivian & Sons of Hafod Copper Works, Swansea has been recovered), and the wooden schooner *Golden Light*, carrying iron-ore from Falmouth to Swansea when it foundered in 1918. Other South Wales trades are represented by the *Celestine*, lost in 1889 carrying coal and tinsheet from Newport to L'Orient when it foundered 6 miles west-southwest of Mumbles Head, and the *Aurora*, a wooden sloop built in 1818, and lost in 1894 carrying coal from Cardiff to its home port of Cardigan. The *Good Hope*, a wooden smack was lost in 1858 carrying paving stones.

Among the powered vessels which foundered here was the *Haswell*, a wooden paddle-tug built at Jarrow in 1848, lost in 1877 returning to Sunderland from Swansea carrying old slates as a part cargo, part ballast. The *Haswell* was one of many steam tugs services working in and out Swansea which would tow vessels down Bristol Channel to open sea to ensure a fast and safe start to the open ocean.

The west coast paleolandscapes survey identified the eastern part of this area as once being high ground, with medium/high potential for survival of deposits. Where possible deposits should be preserved in situ. The western part was identified as floodplain, with the potential for surviving deposits as medium, particularly in pockets.

In terms of navigation, this area of open sea of moderate depth lies on the western approaches to Swansea Bay. The White Oyster Ledge with its shallower water lies in its eastern part and a heavy sea breaks over the ledge on the ebb tide when opposed by strong westerly winds. However, there is a deeper water channel between these shoals and the Mixon Shoal to the north. There are a number of defined holding anchorages on the approaches to Swansea to the east and west.

Lobster and crab potting is carried out to the north, closer to the coast. Commercial and recreational rod and line fishing are prevalent throughout. Species include bass in particular with tope in the summer and rays, conger, whiting (and dogfish) in winter. The area around White Oyster Ledge is popular. Light otter trawling is carried out along with whelk potting.

Cruiser sailing runs relatively close to the coast between Tenby, Burry Port and Swansea.

Aesthetic, perceptual and experiential qualities

This SCA lies south of Gower, 2.5km south of Mumbles Head at its closest point extending to just over 11km offshore, and so there is a range of influence of the coast. The land has some influence in the majority of weather and visibility conditions. The main features are Cefn Bryn and cliffs in Gower to the north, the settled hills of Langland to the north east, the coalfield plateau to the east with Port Talbot steelworks plumes, and the Exmoor coast visible in clearer conditions further to the south. Whilst some detail is apparent on the Welsh coast, such as individual buildings such as the blocks of flats in Langland and Caswell Bays, Exmoor appears as a low single dimensional line on the horizon with simple colours. Some of the buildings on Gower coast are noticeable and detractive.

The sea has a simple, consistent and unified character at a vast scale and a sense of openness, isolation and exposure. Its qualities are determined entirely by the natural forces of water, through swell and waves, and wind. The area is exposed to the south westerlies and in poor

weather conditions the sea is likely to feel threatening. There is a strong likelihood of tranquillity and sense of wildness in this relatively open sea.

There are a number of leisure craft and occasional views of commercial vessels approaching the ports to the north as well as along the Bristol Channel to the south, so this SCA does not feel remote.

The area is part of the unspoilt sea views from southern Gower.

Cultural benefits and services							
The area contributes to natural heritage in the form of an unspoilt marine area of sea and seabed, contributing to unbroken views from Gower coast across the Bristol Channel towards Exmoor, and from the area towards Gower. It contributes towards leisure and recreation services in terms of its use by long distance cruising/sailing. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature which contributes to the perception of Gower's character.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key Existing or potential change that may affect the selected special quality							

Summary

- Longshore transport of sediment in Bristol Channel.
- Potential aquaculture may have a positive or negative effect on biodiversity depending on management and may have an effect on seascape character if there are permanent surface structures.
- Potential tidal lagoon development could have a significant effect on seascape character, enclosing the sea and affecting the local area and views to and from Gower AONB and the associated coast.
- Further housing of caravan/camping development on cliffs and in bays on Gower Coast to the north would impact on views and tranquillity.

Key sensitivities

Factors contributing to sensitivity

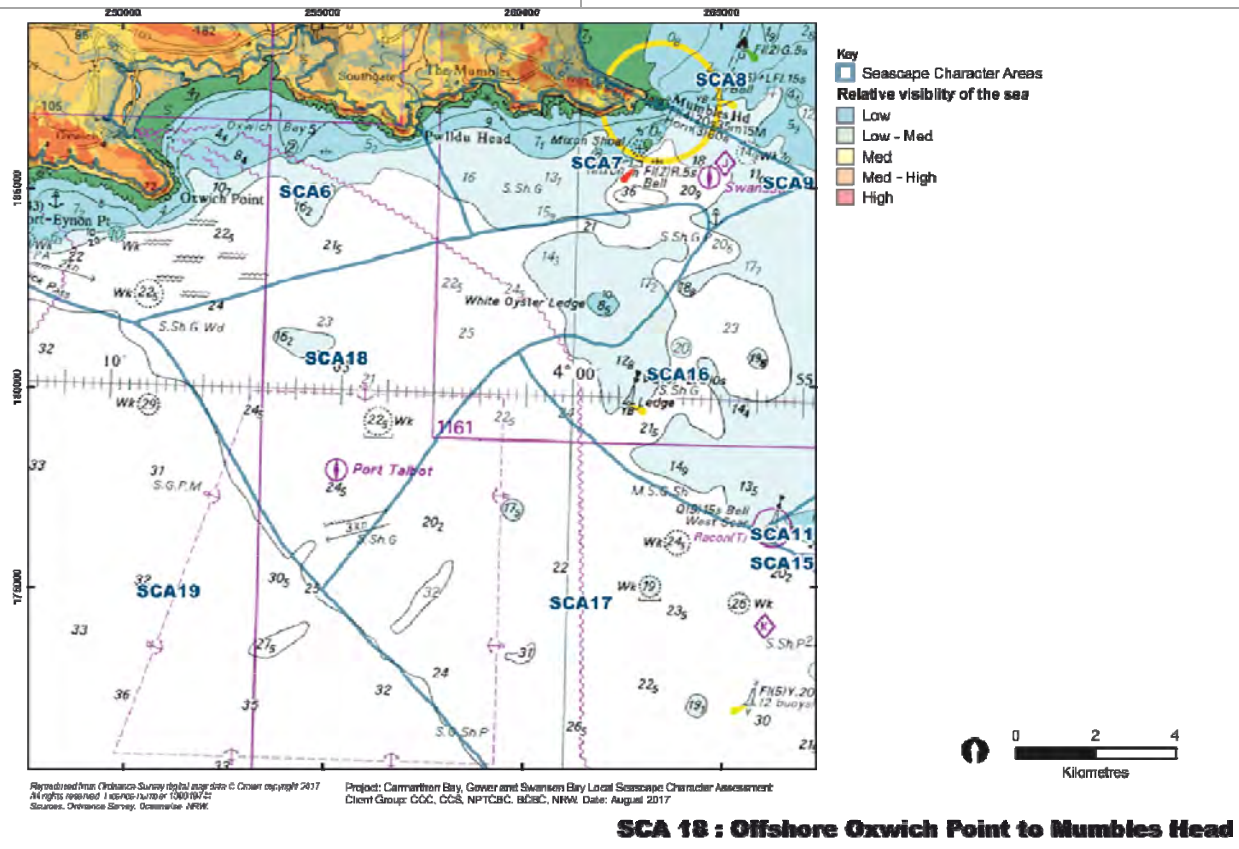
The open, exposed, wild, unspoilt character of the area with views towards Gower, Lundy and Exmoor.

Forms part of the open setting of Gower to the north contributing to the essentially unspoilt natural marine character of the area.

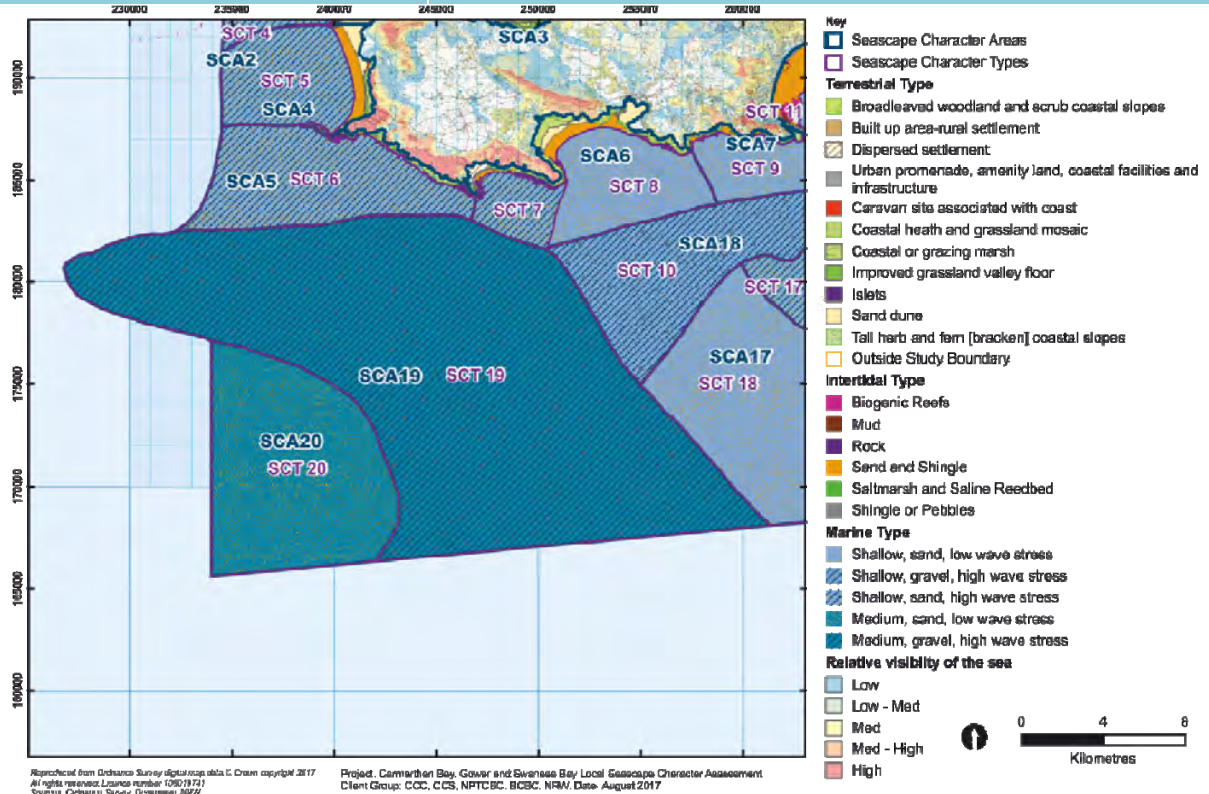
Users of Gower, the Wales Coast Path and the headlands and beaches at Oxwich, Port Eynon, Langland and Caswell Bays are sensitive receptors.

Factors detracting from sensitivity

Use by some shipping approaching and leaving the ports in Swansea Bay.



Seascape Character Area No:	19
Seascape Character Area Name:	Bristol Channel- offshore



SCA 19: Bristol Channel- offshore



Leisure fishing on the northern fringes of the area south of Port Eynon, in a view to the south west out to sea in hazy conditions.

Summary Description

This large area is located offshore on the south western fringes of Gower, extending out into the middle of the Bristol Channel. It is medium depth sloping from 30m to 50m deep with a gravel seafloor with high wave energy and strong currents.

Key characteristics

- Open sea extending from Helwick Sands to the middle of the Bristol Channel with medium depth water between 30m and 50m deep with a mixed seabed of ridges and channels and gravel extending west.
- Generally high wave energy and strong tidal currents.
- Single known wreck site of a large intact steamship, the *Fagernes*.
- Provides relatively 'hazard free' sailing south of Helwick Sands and the southern part is a busy shipping lane up the Bristol Channel.
- Sea with simple, open characteristics at a vast scale dominated by swell, waves and winds with a sense of wildness and remoteness increasing to the south.
- Contributes strongly to open and unspoilt sea views from southern Gower and Caldey Island including from the Wales Coast Path.
- The key visible coastal features are Rhossili Down and Cefn Bryn to the north and Lundy and the North Devon coast to the south.
- Tranquillity will be reduced by commercial shipping.

Natural influences

The offshore open sea shelf south of Gower and Helwick Sands. It deepens south into the Bristol Channel beyond medium depth >30 m, but remains less than 50m depth. The contours show numerous shallow drainage channels ('palaeochannels') running perpendicular to the east-west tidal currents. The underlying bedrock of Lower Jurassic mudstones and marls/limestones, strikes east-west and is cut by both east-west and roughly north-south faults. The overlying gravel seafloor sediment is part of a large gravel tongue extending to SCA18 in shallower depths. The various sand/gravel bars are dynamic and always changing. Tidal currents are strong and wave energy is high, with tidal range >8m.

The northern edge of this area is part of Carmarthen Bay and Estuaries SAC.

Cultural influences

The SCA forms part of the Bristol Channel that provides the sea-way to South Wales, Bristol and to Cornwall and Devon, and that is fed by the Severn and the Avon. It has strong linkages with the maritime trade-routes of western Britain since Prehistory.

A known wreck site is the *Fagernes*, a large, intact wreck standing 4.1-5m above the seabed, a steamship built as the *Meikai Maru* by the Osake Iron Works Ltd, lost in 1926. The wreck was located by a Belgian minesweeper in 1976. No other wreck sites have been identified, but vessels that are known to have come to grief in this SCA include several which were sailing between South Wales and Ireland, as well as one French vessel and one Norwegian vessel. Two aircraft are also known to have been lost here, in 1954, the result of a collision - a reminder of the importance of the South Wales coast in military training area in both world wars and subsequently.

The west coast paleolandscapes survey identified the northern part of the area as being relatively high ground with very high potential for surviving deposits. To the south west, the area was identified as a floodplain also with very high potential for survival of deposits. It recommended that every attempt is made to preserve deposits in situ. The eastern part was identified as floodplain, with the potential for surviving deposits as medium. There is some possibility of survival of deposits, particularly in pockets. To the far south west, there is a well characterised area of wetlands, but the degree of preservation of deposits is likely to be low. The degree of preservation of deposits is uncertain, but what does survive is likely to be highly significant. It is recommended where possible they are preserved in situ.

In terms of navigation, this large area of open sea with deep water, over 30m deep, runs from the Helwick Sands bordering it to the north out to the middle of the Bristol Channel. It has no defined navigational hazards or marks.

The SCA lies either side of the 6 mile limit. Lobster and crab potting is carried out to the north, close to shore. Commercial and recreational rod and line fishing tend to be within the 6 mile limit. Species include bass in particular with tope in the summer and rays, conger, whiting (and dogfish) in winter. The use of long lines have been recorded to the north. Occasional light otter trawling is carried out along with whelk potting.

The southern part of the character area encompasses the busy shipping lanes associated with vessels heading up estuary to Cardiff and Bristol. Leisure sailing and motor cruisers between Tenby, Burry Port and Swansea take a course relatively close to the coast, avoiding the Helwick Sands. Others crossing the Bristol Channel will ply through the area.

Helwick Sands to the north are licensed for aggregate extraction but are not currently in use.

The southern part is licensed as part of the Bristol Channel Round 3 offshore windfarm development zone. The Atlantic Array wind farm, which was proposed in part of the overall zone, which extends beyond this SCA, has been withdrawn.

Aesthetic, perceptual and experiential qualities

This area has not been visited. The area lies less than 1.7km from the coast south of Port Eynon out to around 18km. It would be expected that there would be a range of influence of the coast. The cliffs of Gower would be apparent as strong elements prominent in the view at points to the north decreasing to a thin line on the horizon backed by higher ground at Cefn Bryn and Rhossili Down, and only visible in clearer visibility. To the south, the coast and landform of Exmoor would become more apparent. The feeling in the majority of the area would be open sea away from the influence of land, other than this visual connection.

The sea has a simple, consistent and unified character at a vast scale and a significant sense of openness, isolation and exposure. Its qualities are determined entirely by the natural forces of water, through swell and waves, and wind. The areas are exposed to the south westerlies and in poor weather conditions the sea is likely to feel threatening. There is a strong likelihood of tranquillity and sense of wildness and remoteness in this open sea.

The number of leisure craft and fishing vessels will be apparent near the coast but more limited away from the coast but there will be views of commercial vessels using the shipping ways to Swansea, Port Talbot, Cardiff and Bristol.

The area would be part of the unspoilt sea views from Southern Gower and from the Pembrokeshire Coast including Caldey Island.



View of offshore area from Rhossili Down

Cultural benefits and services							
The area contributes to natural heritage in the form of an unspoilt marine area of sea and seabed, contributing to unbroken views from the coast across the Bristol Channel towards Exmoor, Lundy and towards Gower. It contributes towards leisure and recreation services in terms of its use by long distance cruising/sailing. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature.							
Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
	Key	Existing or potential change that may affect the selected special quality					
Summary							
<ul style="list-style-type: none"> • Longshore transport of sediment in the Bristol Channel. • Potential aquaculture may have a positive or negative effect on biodiversity depending on management and may have an effect on seascape character if there are permanent surface structures. • Potential aggregate extraction would modify and disturb the seabed and slightly disturb the remote and tranquil character of the area. • An offshore windfarm in the Bristol Channel Round 3 licensed area would change the feeling 							

of remoteness and would affect and block views to Lundy and the North Devon coast.

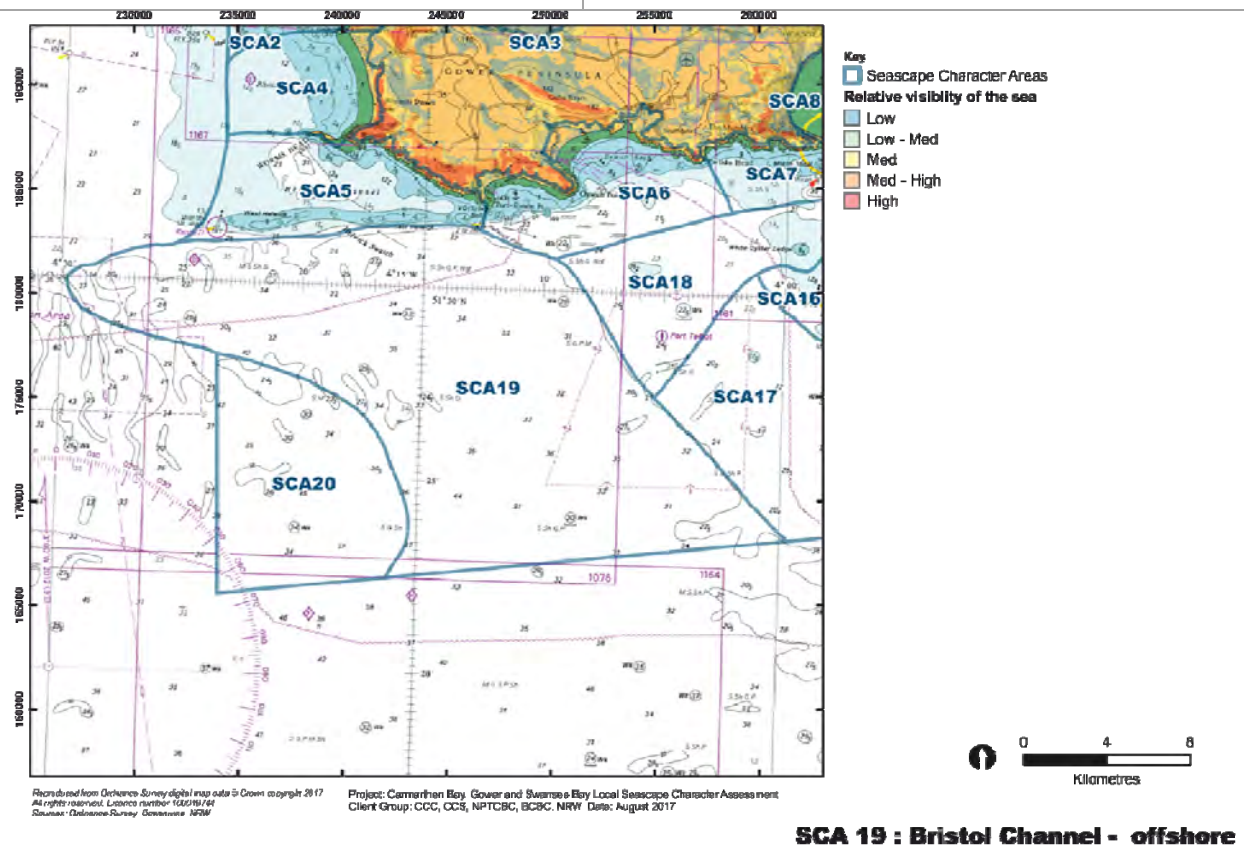
Key sensitivities

Factors contributing to sensitivity

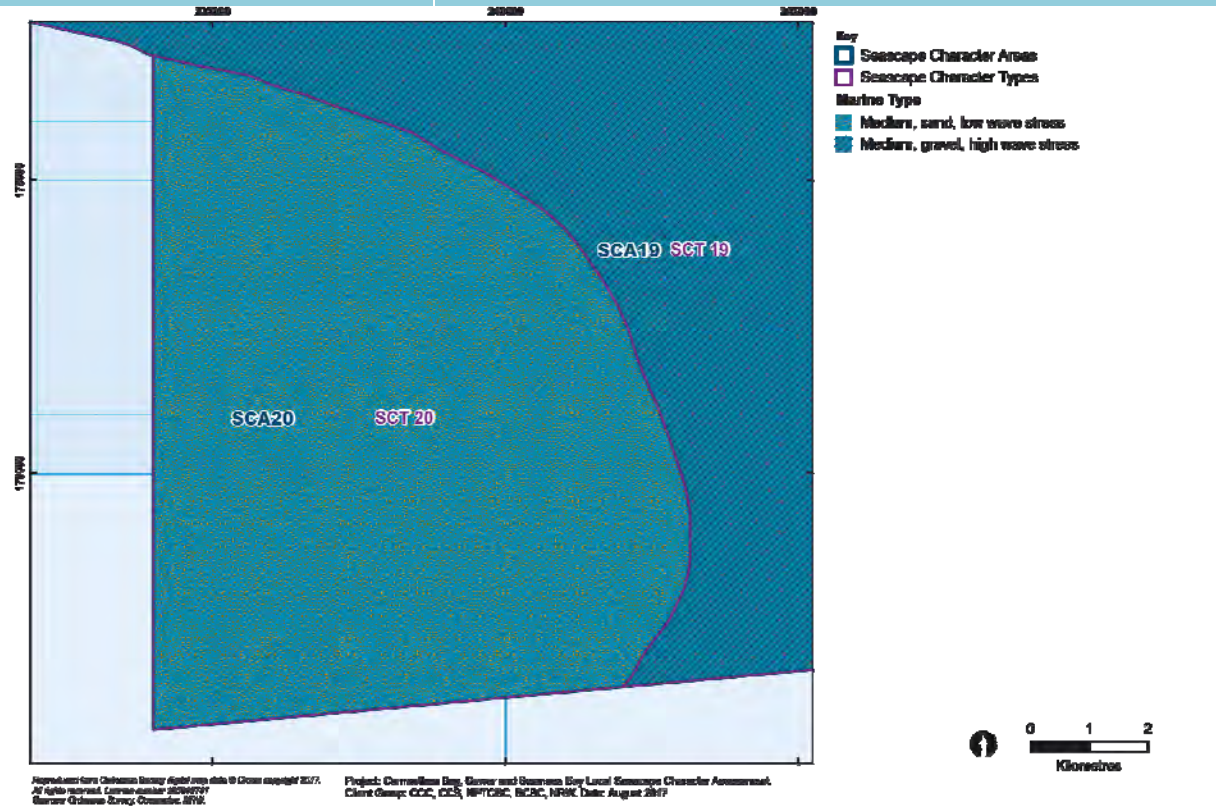
The open, exposed, wild, unspoilt character of the area with views towards Gower, Pembrokeshire, Lundy and Exmoor.
 Forms part of the open setting of Gower to the north contributing to the essentially unspoilt natural marine character of the area.
 Users of Gower eg at Rhossili Head and the Wales Coast Path are sensitive receptors.

Factors detracting from sensitivity

Use by shipping along the Bristol Channel and approaching and leaving the ports in Swansea Bay.



Seascape Character Area No:	20
Seascape Character Area Name:	Bristol Channel - south west offshore



SCA 20: Bristol Channel - south west offshore



View of area offshore beyond Worms Head

Summary Description

The area is located south of Gower stretching towards the middle of the Bristol Channel with medium depth water and a gently sloping sandy seafloor with channels and ridges which are dredged. The area is a highly exposed marine environment with distant views to land. It links into

SCA43 in the Pembrokeshire Coast assessment.

Key characteristics

- Open sea in the middle of the Bristol Channel with medium depth water between 30m and 50m deep seabed of ridges and channels perpendicular to the east - west tidal currents.
- Generally low wind stress and moderate tide speed.
- Wrecks from foundering and Second World War attacks.
- Licensed for aggregate extraction and used for commercial shipping and leisure sailing by larger boats.
- Sea with simple, open characteristics at a vast scale dominated by swell, waves and winds with a sense of wildness and remoteness.
- Contributes to open, unspoilt sea views from south western Gower.
- The key visible coastal features are Rhossili Down and Cefn Bryn to the north, Lundy and the North Devon coast to the south and Caldey Island to the north west.
- Tranquillity will be reduced by dredging activity.

Natural influences

This is an area of medium depth water between 30m to 50m depth, gently south sloping (<1°) sandy sea floor with topography of shallow drainage channels ('palaeochannels') perpendicular to the moderate east-west tidal currents. The open sea is exposed to low wave stress but high tidal range >8 m. Underlying bedrock is east-west Triassic mudstones overlain by Lower Jurassic mudstones and marl/limestones, cut by east-west faults. The seafloor sediment of gravelly sand fines westwards into sand (in adjacent Pembrokeshire SCA43), and coarsens eastwards into the higher wave stress area of SCA19. Sediment is transported in tidal currents, carried mostly in suspension. The sand bars are dynamic and always changing.

There are no nature conservation designations within this area.

Cultural influences

This area lies in the Bristol Channel that provides the sea-way to South Wales and to Cornwall and Devon, and that is fed by the Severn and the Avon. There are strong linkages with the maritime trade-routes of western Britain since Prehistory.

Wrecks associated with this area date from 1782 to 1973. The earliest is of the *Endeavour*, on passage from Hayle to Swansea with a cargo of copper ore, the most recent the *Trevessa* of Penzance, which foundered with the loss of all its crew. Other ship-losses are of sailing vessels registered at Dublin, Swansea, Brixham. The only known steam vessel is the *London II*, built in 1924 by Howaldtswerke of Kiel, a screw steamer with a triple expansion engine. It was attacked and sunk by a German aircraft on 22 March 1941 on passage from Manchester to Cardiff with a cargo of steel billets and scrap - illustrating the significance of this shipping lane in wartime.

The inundated palaeolandscapes of the Bristol Channel may yield evidence for the change from hunter-gatherer societies to communities of settled farmers. The west coast paleolandscapes survey identified the northern part as a well characterised area of plains and floodplains, with over most of the area very high potential for survival of deposits. It is recommended that every attempt is made to preserve deposits in this area in situ. To the south of the area there is a well characterised area of wetlands, but the degree of preservation of deposits is likely to be low. The degree of preservation of deposits is uncertain, but what does survive is likely to be highly significant. It is recommended where possible they are preserved in situ.

In terms of navigation, this area of open sea with deep water, lies close to the middle of the Bristol Channel. It has no defined navigational hazards or marks. The southern part in particular encompasses the major shipping lanes passing up the estuary to Bristol and Cardiff. The area may be used by larger sailing & motor cruisers on passage between England and Wales and up the Channel.

The area lies outside the 6 mile limit and tends to be less used for fishing. Occasional light otter trawling and commercial rod and line is carried out along with whelk potting. However, the majority of the area is licensed for aggregate extraction, although not currently used. Extraction from the Nobel Banks to the west of the SCA is currently in operation. The southern part is licensed as part of the Bristol Channel Round 3 offshore windfarm development zone. The Atlantic Array

wind farm, which was proposed in part of the overall zone, which extends beyond this SCA, has been withdrawn.

Aesthetic, perceptual and experiential qualities

This area has not been visited. It lies near the middle of the Bristol Channel, 11.5km south east of Worms Head at its closest point. The main landmark features will be Rhossili Downs and Cefn Bryn in Gower to the north and the North Devon coast and Lundy Island to the south and south west respectively. The land will appear as a low single dimensional line on the horizon with simple colours.

The sea has a simple, consistent and unified character at a vast scale and a sense of openness, isolation and exposure. Its qualities are determined entirely by the natural forces of water, through swell and waves, and wind. The area is exposed to the south westerlies and in poor weather conditions the sea is likely to feel threatening. There is a strong likelihood of tranquillity and sense of wildness and remoteness in this open sea.

The number of leisure craft will be limited but there may be views of commercial vessels using the shipping ways and dredgers extracting aggregate to the west which may disrupt tranquillity at times.

The area would be part of the unspoilt sea views from Southern Gower and from the Pembrokeshire Coast including Caldey Island.

Cultural benefits and services

The area contributes to natural heritage in the form of a relatively unspoilt marine area of sea with a disturbed seabed, contributing to unbroken views from the coast across the Bristol Channel towards Exmoor, Lundy and towards Gower. It may contribute towards leisure and recreation services in terms of its use by long distance cruising/sailing. In spiritual and religious terms, the area has a sense of wildness, tranquillity and connectedness with nature.

Forces for change

Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use-commercial and leisure fishing, aqua-culture	Marine use-energy and minerals/ aggregate extraction	Development pressure	Land management changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							

Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key		Existing or potential change that may affect the selected special quality					

Summary

- Longshore sediment drift and deposition in Bristol Channel.
- Potential aggregate extraction would modify and disturb the seabed and slightly disturb the remote and tranquil character of the area.
- An offshore windfarm in the Bristol Channel Round 3 licensed area would change the feeling of remoteness and would affect and block views to Lundy and the North Devon coast.

Key sensitivities

Factors contributing to sensitivity

The open, exposed, wild, unspoilt character of the area with views towards Gower, Pembrokeshire, Lundy and Exmoor.

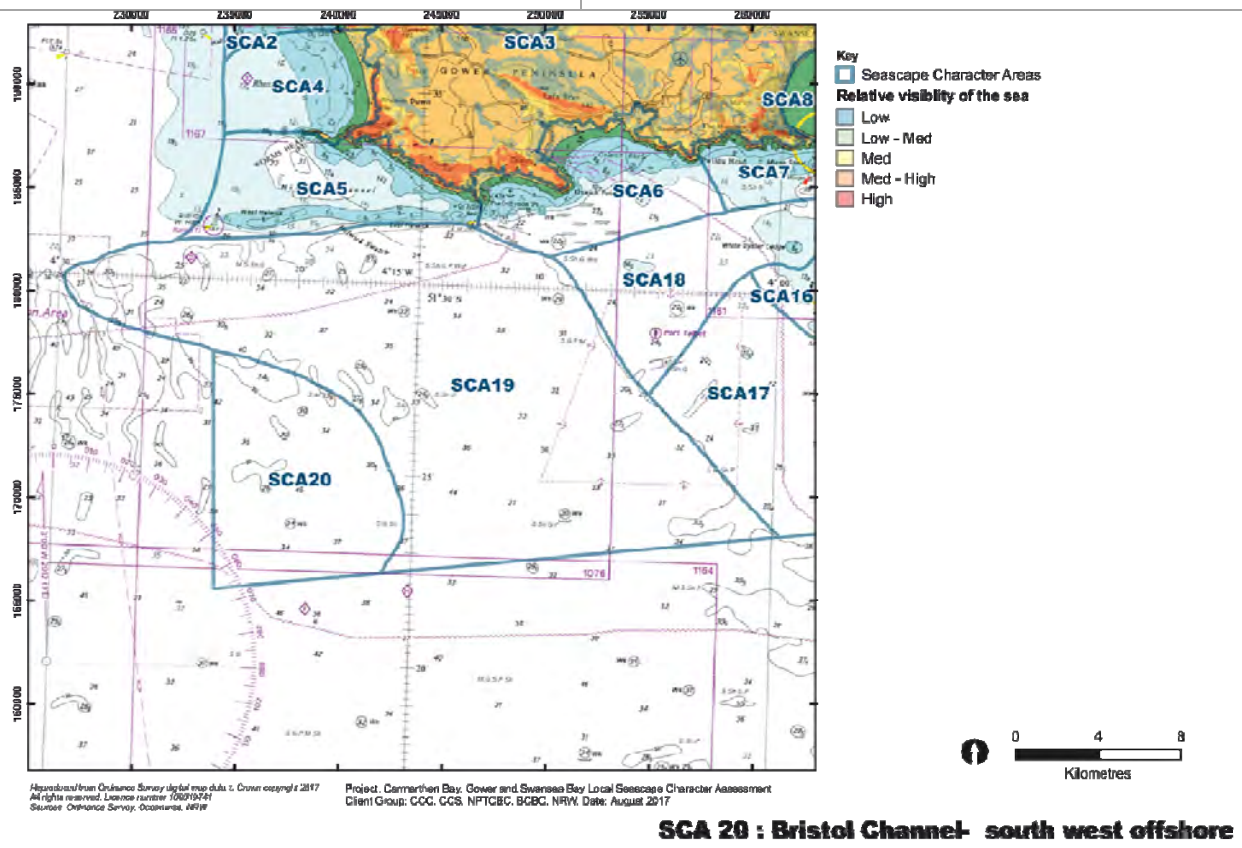
Forms part of the open setting of Gower to the north contributing to the essentially unspoilt natural marine character of the area.

Users of Gower eg at Rhossili Head and the Wales Coast Path are sensitive receptors.

Factors detracting from sensitivity

Previous/potential licensed use for aggregate extraction.

Use by shipping along the Bristol Channel.



Appendices



Appendix A

Seascape typology and types

MARINE SEASCAPE CHARACTER TYPES

Area ID	Category	Nomenclature	Type Name	Type level 1 Bathymetry	Type level 2 Seabed	Type level 3 Wave stress	Topography	Water movement	Sea features	Area	Bedrock	Notes	Adjacent Intertidal
No.	Marine/ Estuary/ Freshwater	SCT----	Depth, sea bed, wave stress	0-30, 30-60, >60 m	sea bed, sediments/ bedrock	0-3 = low, 4-7 = high	slope ° - low <1, moderate 1-10, high >10	tidal, current, slack etc	depth range, ridge, sand bar, strait etc	Name	Age		
1	Marine	SCTmte	Tidal channels, estuary	Tidal channels	Sand	High/strong waves [4-7]	low slope (<1°)	tidal	Tidal channels through estuary mouth sand bars - Laugharne Sands, Carmarthen Bar, Cefn Sidon Sands	Afon Tywi mouth (also Taf and Gwendraeth)	Lower Devonian Milford Haven Group- Namurian Twrch Sandstone overlain by Quaternary Till; strike E-W		sand
2	Marine	SCTmssh	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Sand	High/strong waves [4-7]	low slope (<1°)	current to tidal	<20 m, Pembrey Sands into Carmarthen Bay	Pembrey Sands and Bay	Namurian Twrch Sandstone - Westphalian Brithdir Member, covered by glacial till; strike E-W	Including Pembrey Burrows	sand
3	Marine	SCTmte	Tidal channels, estuary	Tidal channels	Sand	Low waves [1-3]	low slope (<1°)	tidal	Tidal channels flanked by tidal sands and muds, and saltmarsh, in broad alluvial valley	Loughor Estuary	Upper Carboniferous Limestone to Westphalian, covered by glacial till; strike E-W; Llanrhidian Burrows	Whiteford Point to Burry Point: Artificial ground on N side from Burry Point to Loughor	sand
4	Marine	SCTmssh	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Sand	High/strong waves [4-7]	low slope (<1°)	current	<20 m, outer estuary into Carmarthen Bay through Outer Bar and Hail Rock shallows	Outer Loughor Estuary	Upper Carboniferous Limestone to Westphalian, covered by glacial till; strike E-W		
5	Marine	SCTmssh	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Sand	High/strong waves [4-7]	low slope (<1°)	current	<20m; bay sloping shallowly to W	Burry Holms to Worms Head	Upper ORS and Carboniferous Limestone	Dunes along N end, Rhossili Down along S. Cliffs from Rhossili to Rhossili Point	
6	Marine	SCTmssh	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Sand	High/strong waves [4-7]	low slope (<1°)	current	<30 m; overall slope to S	Worms Head to Port Eynon Point	Carboniferous mudstones and sandstones - Triassic mudstones - L Jurassic mudstones; sand	Running E-W from Port Eynon to beyond Worm's Head - shallow sand bar <5-20 m Helwick Pass - East Helwick - Helwick Swatch - West Helwick. Helwick Channel between sand bar and Worms Sound. Cliffs along S of Rhossili Head.	
7	Marine	SCTmssh	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Sand	High/strong waves [4-7] in bay, low waves [1-3] to S	low slope (<1°)	current	<20 m; sloping to SSE	Port Eynon Point to Oxwich Point	Carboniferous Limestone, Namurian-Westphalian mudstones/sandstones - Triassic mudstones: sand coarsening S; slightly gravelly sand - sandy gravel	Port Eynon Bay	
8	Marine	SCTmssl	Shallow water/sand sea bed/low wave stress	Shallow water 0-30m	Sand to sandy gravel	Low waves [1-3]; High/strong waves [4-7] in E bay	low slope (<1°)	current	<30 m; sloping to SSE	Oxwich Point to Pwlldu Head	Carboniferous Limestone, Namurian-Westphalian mudstones/sandstones - Triassic mudstones: sand coarsening S; slightly gravelly sand - sandy gravel	Oxwich Bay, shallows of St Christopher's Knoll in bay	
9	Marine	SCTmssl	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Sand to sandy gravel	Low waves (1-3) in E-facing Pwlldu Bay to Brandy Cove and offshore; high/strong waves [4-7] along south-facing rocky coast/cliffs	low slope (<1°)	current	<20 m; sloping to SE to S; shoals (Mixon Shoal) offshore of Limeslade- Mumbles	Pwlldu Head to Mumbles Head	Carboniferous Limestone, Namurian-Westphalian mudstones/sandstones - Triassic mudstones: sand coarsening S; slightly gravelly sand - sandy gravel	Cliffs along coast from Newton to Mumbles	

Area ID	Category	Nomenclature	Type name	Type Level 1 Bathymetry	Type level 2 Seabed	Type level 3 Wave stress	Topography	Turbulence	Sea features	Area	Bedrock	Notes	Adjacent Intertidal
No.	Marine/ Estuary/ Freshwater	SCT----	Depth, sea bed, wave stress	0-30, 30-60, >60 m	sea bed, sediments/ bedrock	0-3 = l, 4-7 = h	slope ° - low <1, moderate 1-10, high >10	tidal, subtidal, slack etc	depth range, ridge, sand bar, strait etc	Name	Age		
10	Marine	SCTmshg	Shallow water/ gravel sea bed/ high wave stress	Shallow water 0-30m	Gravel	High/strong waves [4-7]	low slope (<1°)	current	Mostly 20-30 m except White Oyster Ledge shallows above bedrock area	Offshore Oxwich Point to Mumbles Head	Carboniferous mudstones/sandstones - Triassic mudstones: gravel		
11	Marine	SCTmssl	Shallow water/sand sea bed/low wave stress	Shallow water 0-30m	Gravelly sand (sandy mud in intertidal)	Low waves [1-3]	low slope (<1°)	current	<20 m, crossed by dredged navigation channel from docks	Mumbles Head to main Swansea docks (and Yacht and Aqua Club)	Carboniferous Namurian-Westphalian mudstones/sandstones, Carboniferous Limestone patches of seafloor along strike from Mumbles Head	E-facing bay	
12	Marine	SCTmssl	Shallow water/sand sea bed/low wave stress	Shallow water 0-30m	Sandy mud to muddy sand	High/strong waves [4-7] along S-W to W-facing coast, low waves [1-3] in bay above sandy mud sediment	low slope (<1°)	current	<15 m, crossed by dredged navigation channel from docks	Swansea Docks to Margam and inner Swansea Bay	Carboniferous Limestone, Carboniferous Namurian-Westphalian mudstones/sandstones	W-facing bay	
13	Marine	SCTmssh	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Sand	High/strong waves [4-7]	low slope (<1°)	current	<10 m, sand banks Scarweather Bank and Hugo Bank	Margam to Nottage	Carboniferous Limestone, Triassic mudstones, Lower Jurassic marls/limestones. NW-SE fault truncating CL and Triassic against LJ	W-facing bay	
14	Marine	SCTmshg	Shallow water/ gravel sea bed/ high wave stress	Shallow water 0-30m	Gravel to sandy gravel, bedrock in SE	High/strong waves [4-7]	low slope (<1°)	current	10-30 m	Nottage to E limit and to S	Lower Jurassic marls/limestones		
15	Marine	SCTmssh	Shallow water/ sand sea bed/ high wave stress	Shallow water 0-30m	Sand	High/strong waves [4-7]	low slope (<1°)	current	E-W sand bar <10 m	W end of Nash sand - Middle Nash bar	Lower Jurassic marls/limestones		
16	Marine	SCTmsrh	Shallow water/ rock sea bed/ high wave stress	Shallow water 0-30m	Rock	High/strong waves [4-7]	low slope (<1°)	current	20-30 m	SE corner, S of Ogwr estuary	Lower Jurassic marls/limestones		
17	Marine	SCTmssh	Shallow water/sand sea bed/high wave stress	Shallow water 0-30m	Gravelly to muddy sand	High/strong waves [4-7]	low slope (<1°)	current	15-20m	Mid Swansea Bay	Lower Jurassic marls/limestones	Sea floor sediment fining into bay	
18	Marine	SCTmssl	Shallow water/sand sea bed/low wave stress	Shallow water 0-30m	Muddy sand	Low waves [1-3]	low slope (<1°)	current	20-30 m	Outer Swansea Bay	Lower Jurassic marls/limestones		
19	Marine	SCTmmgh	Medium depth, gravel sea bed, high wave stress	Medium depth water 30-60m	Gravelly sand to sandy gravel	High/strong waves [4-7]	low slope (<1°)	current	30-40 m	SW offshore	Lower Jurassic marls/limestones	NNW-SSE faults, E-W faults	
20	Marine	SCTmssl	Medium depth/sand sea bed/low wave stress	Medium depth water 30-60m	Gravelly sand	Low waves [1-3]	low slope (<1°)	current	30-40 m	SW corner	Lower Jurassic marls/limestones, some Triassic	NNW-SSE faults, E-W faults	
21	Marine	SCTmte	Tidal channels, estuary	Tidal channels	Sand	Low waves [1-3]	low slope (<1°)	tidal	Tidal sands	Afon Taf	Lower Devonian Milford Haven Group overlain by Quaternary Till; strike E-W		sand
22	Marine	SCTmte	Tidal channels, estuary	Tidal channels	Sand	Low waves [1-3]	low slope (<1°)	tidal	Tidal sands	Afon Tywi	Lower Devonian Milford Haven Group overlain by Quaternary Till; strike E-W		sand
23	Marine	SCTmte	Tidal channels, estuary	Tidal channels	Sand	Low waves [1-3]	low slope (<1°)	tidal	Tidal sands	Afon Gwendraeth	Carboniferous LLS-Namurian Twrch Sst overlain by Quaternary Till; strike E-W		sand

INTERTIDAL SEASCAPE CHARACTER TYPES

Source: *Based on CCW Phase 1 intertidal EUNIS L3 description*

<i>Nomenclature</i>	<i>Type</i>	<i>Summary seascape description</i>	<i>Source and comments</i>
SCTiR	Rock	Bedrock, boulders and/or cobbles which can experience large variations in exposure to waves and wind action, salinity and temperature.	derived from high energy, moderate energy and low energy littoral rock, infralittoral rock and supralittoral rock, features of littoral rock
SCTiS	Sand and shingle	Beaches ranging from clean fine-grained, medium or coarse, sands with shells and stones occasionally found on surface through to relatively exposed shores of gravel, pebbles, or cobbles. A range of these materials can be found on the same beach.	derived from littoral sand, sub littoral sand, littoral coarse sediment and littoral mixed sediment
SCTiM	Mud	Fine silt or clay mudflats or muddy sands in sheltered locations on beaches or within estuaries.	derived from littoral mud and littoral muddy sand
SCTiSM	Saltmarsh and saline reedbed	Salt tolerant species including grasses, sea grasses, or reeds growing on sandy or muddy sediment periodically covered by Spring high tides and/or where the sediment retains water which stops roots drying out.	derived from coastal saltmarsh and saline reedbed
SCTiB	Biogenic reefs	Reefs of biological extraction such as mussels, cockles or honeycomb worm on a rock or cobble bed, or exposed fossilised forest with tree trunks apparent.	derived from littoral biogenic reefs

TERRESTRIAL SEASCAPE CHARACTER TYPES

Sources: Based on NRW LANDMAP landscape habitats aspect Level 2 and Level 3 classification, with boundaries defined by LANDMAP Habitats and Visual and Sensory aspects and landscape character area boundaries where appropriate. Additional data used include OS and Google Earth to refine categories if necessary to provide differentiation between areas.

<i>Nomenclature</i>	<i>Type</i>	<i>Summary seascape description</i>	<i>Source and comments</i>
SCTta	Amenity land-coastal	Area of predominantly green formal recreation/sports ground, informal open space or golf courses.	derived from Google Earth
SCTtb	Tall herb and fern [bracken] coastal slopes	Slopes of semi-natural vegetation facing the coast, dominated by bracken.	derived from querying level 2 and 3
SCTtbw	Broadleaved woodland and scrub coastal slopes	Mature broadleaved natural or semi-natural deciduous woodland or scrub on coastal slopes.	derived from querying level 2 and 3
SCTtc	Maritime cliff and slope	Coastal eroded landforms which occur where continuous wave action erodes rocks to create cliffs or rocky slopes of varying heights.	derived from querying level 3
SCTtcm	Coastal heath and grassland mosaic	Important and rare mosaic of heathland communities, much of which is dominated by mixtures of heathers, Western gorse and grasses.	derived from querying levels 2 and 3-Dry Mosaic on coastal fringe with habitats defined plus Google Earth to verify areas.
SCTtcs	Caravan site associated with coast	Formal (permanent) static caravan parks and seasonal campsites, with associated infrastructure.	Identified from OS
SCTtcw	Coniferous forest	Coniferous plantation, usually planted in monoculture (single species).	derived from querying level 3
SCTtd	Sand dune	Landform where constructive waves and currents have caused the accumulation of sand, and where prevailing onshore winds have blown this sand in land over time.	derived from querying level 3
SCTtdcw	Sand dune with conifers	Sand dune planted up with coniferous plantation, usually after levelling.	derived from querying level 3 plus adding conifers
SCTtdr	Dispersed settlement	Small-scale rural settlement outside towns and villages dispersed in landscape, usually along roads.	Identified from OS
SCTtgam	Improved grassland valley floor	Pastoral farmland on valley floor.	derived from level 3 as improved grassland
SCTtgams	Improved grassland slopes	Pastoral farmland on coastal, hill or valley slopes.	derived from level 3 as improved grassland
SCTtgm	Grassland and semi-natural mosaic	Mosaic of semi-natural habitats such as heather, gorse and/or grasses interspersed with pastoral farmland at a fine grain.	mosaic derived from querying levels 2 and 3 with habitats defined plus Google Earth to identify some areas.
SCTtgmm	Grassland mosaic	Mosaic of semi-natural grassland habitats interspersed with pastoral farmland at a fine grain.	derived from level 2 as grassland and marsh and level 3 as mosaic
SCTtgms	Grassland mosaic slopes	Mosaic of semi-natural grassland habitats interspersed with pastoral farmland at a fine grain on coastal, hill or valley slopes.	derived from level 2 as grassland and marsh and level 3 as mosaic

<i>Nomenclature</i>	<i>Type</i>	<i>Summary description</i>	<i>Source and comments</i>
SCTti	Built up [industrial]	Industrial sites and parks, business/office parks, hard infrastructure sites such as energy eg power stations.	derived from querying level 2 and identifying specific use
SCTtis	Islets	Small landforms completely surrounded by water usually consisting of rock with limited amounts of vegetation. Some islets are surviving remnants of former headlands.	Identified from OS
SCTTma (m on rough plan)	Coastal or grazing marsh	Flat coastal pasture just above the high watermark with or without coastal protection.	Area identified as saltmarsh or similar in Landscape habitats but not in intertidal areas
SCTtmh	Marina/harbour	Man-made harbour or marina with moorings protected from the action of the sea and winds.	Identified from OS
SCTtmi	Coastal or grazing marsh mosaic with industry, infrastructure or derelict sites	Predominantly coastal or grazing marsh interspersed at a fine grain with other uses including industrial sites, infrastructure and derelict sites.	Area identified as saltmarsh or similar in Landscape habitats but not in intertidal areas
SCTtp	Built up [port]	Built-up area including buildings and hard standings associated with a port/docks.	derived from querying level 2 and identifying specific use
SCTtr	Built up [resort]	Built-up area primarily associated with tourism.	derived from querying level 2 and identifying specific use
SCTtru	Built up area-rural settlement	Small-scale rural settlement- villages.	derived from querying level 2 and identifying specific use
SCTtrw	Reedbeds and waterbodies	Area dominated by reedbeds and water bodies some intervening land.	Identified as wetlands centre in Llanelli
SCTtst	Beach/rough ground above High Water Mark (HWM)	Shoreline landform composed of loose sand, shingle or pebbles deposited by wave or current action.	area identified as intertidal in Level 3 but not included in intertidal areas identified in CCW Phase 1 intertidal EUNIS L3
SCTtu	Built up area-urban	Large scale urban settlement- cities or towns.	derived from querying level 2 and identifying specific use
SCTtup	Urban promenade, amenity land, coastal facilities and infrastructure	Predominantly hard coastal edge in or adjacent to urban areas with some buildings and structures and small scale green areas.	Identified from OS
SCTtw	Open water	Area of open water surrounded by land.	derived from querying level 2
Features			
HF	Castle/fort/ defensive works/large historical feature	Historic feature normally noticeable in the landscape.	OS mapping, Admiralty charts
L	Lighthouse	Lighthouse.	OS mapping, Admiralty charts
HM	Harbour/Marina	Man-made harbour or marina with moorings protected from the action of the sea and winds.	OS mapping, Admiralty charts

Appendix B
Data and sources

DATA SOURCES FOR BASELINE INFORMATION

Data Layers	Source	Obtained from
Hydrospatial Chartered Rasters	Oceanwise	NRW
Hydrospatial Chartered Vector Features	Oceanwise	NRW
OS map - 1:250,000	Ordnance Survey	NRW
OS map - 1:50,000	Ordnance Survey	NRW
OS map - 1:25,000	Ordnance Survey	NRW
Mean High Water	Ordnance Survey	NRW
Mean Low Water	Ordnance Survey	NRW
12 Nautical Mile Territorial Sea limit	Oceanwise	NRW
Lines	UKHO	NRW
Polygons	UKHO	NRW
Renewable Energy Zone	Oceanwise	NRW
Unitary Authority Boundaries	Ordnance Survey	NRW
Harbour Limits	Oceanwise	NRW
Shoreline Management Plan	Councils	Contractor
Coast Pilot	Various/Imray	Contractor
Ports	Oceanwise	NRW
Character Assessment		
Landscape Character Map for Wales	NRW	NRW
Regional Seascape Units	NRW	NRW
LANDMAP aspects	NRW	Download
Landscape character assessment	CCS	CCS
AONB	NRW	NRW
Natural Features		
OS Landform Panorama	Ordnance Survey	Contractor
Oceanwise Bathymetry and Elevation	Oceanwise	NRW
Wave Climate	NRW	NRW
DigMapGB-250	NRW	Contractor
DigBath (Digrock250 & DigSB250)250	NRW	Contractor

Data Layers	Source	Obtained from
Hydrospatial Climate and Oceanography	Oceanwise	NRW
Intertidal Phase 1 Habitat Survey	NRW/JNCC	NRW
Terrestrial Phase1 Habitat Survey	NRW	NRW
UK SeaMap 2006 & 2010	JNCC	Contractor
Tidal Flow	Renewable Energy Atlas	Contractor
OS Base Maps	OS	NRW
Cultural/Social Factors		
Wrecks	RCAHMW	NRW
Marine Archaeological Sites	RCAHMW	Coflein/ contractor
Wrecks & Obstructions	Oceanwise	NRW
Anchorage, Anchor Berths & bad weather Refuge	Oceanwise	NRW
Buoys	Oceanwise	NRW
Ferry Terminals	Oceanwise	NRW
Fog Signals	Oceanwise	NRW
Traffic separation Zones	Oceanwise	NRW
Coastguard Stations	Oceanwise	NRW
Coastal Path/Long Distance Walking Routes	NRW	NRW
Sailing Areas	RYA	Contractor-pdf
Cruising routes	RYA	Contractor-pdf
Sailing Facilities	RYA	Contractor-pdf
Small Craft mooring sites	Oceanwise	NRW
Tourism Sites	Pembrokeshire Coastal Forum	Contractor
Water Skiing Areas	Pembrokeshire Coastal Forum	Contractor
Wind & Kite Surfing Areas	Pembrokeshire Coastal Forum	Contractor
Yacht Harbour & Marine Areas	Oceanwise	NRW
MOD Areas	MOD	NRW
Activity Licenses [MOD, wind, dredging, oil, gas]	Oceanwise	NRW
Infrastructure	Oceanwise	NRW

Data Layers	Source	Obtained from
Tidal Energy resource	UK Renewable Atlas	Contractor
Wave power Resource	UK Renewable Atlas	Contractor
Fisheries Atlas	Clare Eno, NRW	NRW
AONB	NRW	Download
Conservation Areas		Contractor
Historic Parks & Gardens	CADW	NRW
Listed Buildings	CADW	NRW
Protected Wreck Sites	CADW	NRW
Scheduled Monuments	CADW	NRW
Historic landscape Areas	CADW	NRW
Special Areas of Conservation SACs	NRW	Download
National Nature Reserves NNRs	NRW	Download
Ramsar Sites	NRW	Download
Special Protected Areas SPAs	NRW	Download
RSPB Reserves	RSPB	NRW
Important Bird Areas	RSPB	NRW
Dark Skies		Contractor
Wave Climate	NRW	NRW/LUC
Land with Sea Views	NRW	NRW
Sea Surface Visibility	NRW	NRW
Tranquil Areas	NRW	NRW

Key

Yellow = NRW supplied

Orange = download from NRW website

Orange- NRW supplied separately

Blue = contractor sourced if necessary

light green= received from client [CCS] and third parties

Red- GIS cost prohibitive, pdf mapping obtained.

Dark green- information obtained at a cost

Appendix C

Stakeholder consultation

COMMENTS FROM STAKEHOLDER WORKSHOPS

Four workshops for invited stakeholders were held to facilitate responses to draft seascape character areas (SCAs) and descriptions. Welsh translation services were offered prior to the workshops but not taken up. Three workshops were for geographically distinct areas covering coastal and estuarial SCAs. The fourth workshop covered offshore SCAs and also provided an overview. The comments at the workshops were based on the following information for each Seascape Character Area (SCA) provided to the attendees:

- Summary description
- Key characteristics
- Preliminary forces for change
- Maps showing SCA boundaries.

The detailed description of each SCA which underpinned the summary information was not presented and therefore some comments may have already been covered by these detailed descriptions.

This report also notes responses by the study team.

Key to study team responses:

- Noted- point will be considered in revising or adding to text or figures for the draft final report.
- Any other comment- major point which requires justification for action.

WORKSHOP 1	
Wednesday 29th March 2017 9.15-1pm. Conference Room, The Beacon Centre, Dafen, Llanelli, SA14 8LQ	
Attendees Stuart Thomas, NRW Tony Heath, Carmarthen Bar Navigation Society Lizzie Wilberforce, Dyfed Wildlife Trust Peter Stopp, Carmarthenshire Antiquarian Society Rosie Carmichael, Carmarthenshire County Council (CCC) Rural Conservation Officer Bethan Lovering, CCC Forward Planning Officer Steve Welchman, CCC Landscape Officer	
Comments made	Study team response
SCA 1 Consider extending SCA 1 to the southern extent of the Carmarthen Bar – this is part of the river landscape rather than bay?	The boundary is consistent with the approach taken with SCA3 Burry Inlet ie between two points which marks the end of the estuary with associated intertidal and coastal habitats/seascapes and the beginning of Carmarthen Bay. The sandbanks of the Carmarthen Bar to the south are part of the shifting outer bar complex and whilst closely related to the estuaries in terms of processes are considered as a separate area related to Carmarthen Bay. No change is proposed.

Tidal limit is further up beyond Carmarthen.	The limit is beyond Carmarthen and is defined by the extent of the intertidal dataset which has been used to define inland limits throughout the study. No change is proposed.
Clarify overlap and relationship with designated areas.	Noted
Power lines are a detractor and limit navigation for masted craft.	Noted
Note railway is the mainline railway (not a 'scenic' railway as such).	Noted
Note importance of coastal path.	Noted
Note important wild bird populations.	Noted
Fishing in the area is for shellfish, not just cockles. Also fishing is more than occasional.	Noted
Mention SSSIs and other nature conservation designations.	Noted
Mention coracle fishing.	Noted
Dylan Thomas is also associated with Fernhill and other areas locally.	Noted
Mention Kidwelly castle & hillforts.	Noted
Note Kidwelly as starting point for revolution??	Noted
Note early human occupation of cliffs / steep slopes.	Noted
Fish weirs in Gwendraeth estuary.	Noted
Some medium size boats in boat club, not just small/recreational.	Noted
<i>Forces for change:</i>	
Chalets on hillside east of Laugharne are highly visible especially if white – impact on estuary and coast path.	Noted
If MOD relocate may lead to negative changes in habitat.	Noted
Possible offshore energy & small turbines.	Noted
Water quality in rivers/estuaries will never be high due to run off and affects fisheries. Sources especially from food processing and farming.	Noted
Note bathing beaches not designated but this may relate to political factors rather than water quality.	Noted
SCA 2	
Review bay/estuarine boundaries with SCA1 and SCA3– rationale?	The boundaries are consistent ie between two points which mark the end of the estuaries and the beginning of Carmarthen Bay. The deposited sandbanks of the Carmarthen Bar and outer Burry inlet are the outer bar complexes appropriately part of Carmarthen Bay. No change is proposed.
Names – can we use nicer coastal place names eg Cefn Sidan to Whiteford/Burry Holms? Keep names consistent with designated area names?	The name of Carmarthen Bay east is consistent with the names of other SCAs in the Pembrokeshire study and

	focusses appropriately on the name of the bay rather than the coast.
Beach should be referred to as Cefn Sidan not Pembrey.	Noted
Note views to Caldey Island.	Noted
Note MOD and racing circuit noise is big factor in Pembrey experience.	Noted
Military activity includes private – Qinetic??	Noted
<i>Forces for change:</i>	
Dunes not dynamic enough for habitat diversity.	Noted
Sea level change – need more detail on this.	Noted
Note storm damage is also big factor.	Noted
Review how Burry Port plans are described.	Noted
SCA 3	
Review rationale for non-straight line across Burry Inlet as boundary.	The line curves to incorporate a small drying sand bar in the outer bar complex.
Ensure we have latest name for the wildfowl centre.	Noted
Note that the area is the Burry Inlet up to Loughor bridge then Loughor estuary- the area should include both names.	Noted- will amend name.
Note the contrast between the accessibility on the north side of the estuary compared to the south side.	Noted
Salt marsh lamb is a key product of the area.	Noted
Railway is the main line and a major flood defence.	Noted
Effect of tide and its movement is significant on landscape experience and character.	Noted
Whiteford lighthouse is a key focal point visible from most areas.	Noted
Cockle fishery is a 'hand fishery'. Penclawdd processes all the west Wales coastal shellfish.	Noted
Machynys Quay is a landmark.	Noted
Note the breached training walls in the middle of the estuary which divert tide and fish.	Noted
Note national cycle route adjacent	Noted
Note the Loughor boat club.	Noted
Note the lights in Llanelli, including the golf range.	Noted
<i>Forces for change:</i>	
NRW stabilisation of tidal flows in Burry inlet affecting cockle beds.	Noted
Also the need for dredging in keeping Burry Port harbour open	Noted
SCA 4	
Why is the northern boundary a curved line and not	The boundary curves to the south to

straight?	avoid a foul area.
Hillend caravan park is not very visible (one opinion) – and do not describe as in the ‘north’.	Noted
SPA is not just an ‘important bird area’.	Noted
All designation should be in capitals.	Noted
Views to Caldey Island should be mentioned.	Noted
Porpoise and seal populations are key spp which should be mentioned. Also possibly dolphins.	Noted
Forces for change	
Dark skies issue – affected by caravan park development etc. Saundersfoot and Tenby are highly visible and night.	Noted
National Trust – what impacts of corporate plan?	Noted
Visitor pressure and impact on Rhossili and narrow roads.	Noted
Atlantic array or successor energy projects may affect the area.	Noted
WORKSHOP 2	
Thursday 30 th March 2017 9.15-1pm. – Committee Room 5, Guild Hall, Swansea, SA1 4PE	
Attendees David Tonge, Gower Coast Adventures Peter Paddy, Gower Society Gareth Evans, Port Eynon Community Council Ruth Henderson, CCS Planning Policy Team Sam Naylor, CCS - Pollution Control Officer Mike Scott, CCS- Gower AONB officer	
Comments made	Study team response
SCA 4	
Should the ridgeline of Rhossili Down be the boundary?	As the ridgeline is a very strong and important feature in the backcloth to the Bay, and the associated slope is close to the coastal edge, it is agreed that the ridgeline should be the boundary.
Is Worms Head more associated with Area 5 as it is an extension of southern cliffs?	Both Worms Head and Burry Holms are limestone features either side of Rhossili Bay. It is also considered that Worms Head is more closely associated visually with SCA 4, enclosing the bay. No change is proposed.
Hillend is a detractor – opinions varied.	Noted
Marine mammals are important to mention eg colony of 50 seals/haul out on the north side of Worms Head, porpoise and dolphins.	Noted
Note porpoise feeding grounds at end of Worms Head.	Noted
Also jelly fish and turtles- although leatherback turtles have	Noted

only been sighted twice..	
Note tidal race.	Noted
MOD flights over the bay (but not a key characteristic).	
<i>Forces for change</i>	
Increase in static caravans – more intense with larger units, more light, more traffic	Noted
Chalets etc v visible if white.	Noted
Increased visitor pressure at Rhossili with improved facilities in National Trust ownership.	Noted
Renewable energy projects could affect views from the area?	Noted
SCA 5	
Note Fall Bay and Mewslade Bay especially used by locals.	Noted
Use of these remote bays much more evident since internet information availability.	Noted
Culver Hole Castle and cave are iconic features	Noted
Steep edge to the Hellwick Bank to the north.	Noted
Recreational use includes rock climbing, surfing at low tide (50 on good day) with parking at Overton Lane, also kayaks, shore fishing, paddle boarders, sailing.	Noted
Also divers at Worms Head.	
<i>Forces for change</i>	
Visitor pressure increasing.	Noted
Recreation concentrated in honeypots?	Noted
Parking demand increasing.	Noted
SCA6	
Wrecks are in both bays and not just marked ones.	Noted
Oxwich Wreck is especially important for divers.	Noted
Busyness of beaches varies with factors eg Oxwich has more day trips, Port Eynon has more locals.	Noted
Development is less visible in Oxwich Bay than Port Eynon Bay which is a possible rationale for splitting the two bays into two separate SCAs.	The underlying physical characteristics of the coast and bays remain similar, and different in character to the coast to the east and west, and a grain of the overall assessment means that the bays are justifiably treated as one SCA. No change is proposed.
Oxwich Bay beach is privately owned.	Noted
Caravan parks are throughout the area	Noted
Housing at Southgate is very visible above the clifftop.	Noted
Water quality is excellent.	Noted
<i>Forces for change</i>	

Visitor and recreational pressure eg jet skis	Noted
Changes in dunes – receding by 6-8m– means:	Noted
Slipway at Port Eynon is less usable/ with exposed foundations.	Noted
storm water outfall now on beach not dunes	Noted
submerged forests eroding	Noted
sand being eroded from beach	Noted
more pebbles	Noted
SCA 7	
Pwll Du Beach - more in common with SCA 8 as sheltered, oriented to SE, although not so sandy and smaller.	The scale and character of this beach/cove has more in common with the coves and coast to the east than the larger sweeping bays to the west. No change is proposed.
Review boundary?? Caswell to Mumbles? Or just note variation from W to E.	See above. Variation between quieter west and busier east should be emphasised.
Lots of fishing, commercial and leisure.	Noted
High density of recreational use.	Noted
Beaches noisy and busy.	Noted
Seal haul out at Limeslade Bay and Brandy Cove.	Noted
Porpoises, dolphins and choughs (Pwll Du Head) present.	Noted
Note local nature reserve at Mumbles Head.	Noted
Bell on Mixon Sands buoy part of sensory experience.	Noted
Mention Mumbles Head as part of SCA8 not in this SCA.	Noted
Water quality for bathing is excellent, as per the rest of the south coast of Gower.	Noted
<i>Forces for change</i>	
Residential development intensification.	Noted
New trends in water sports.	Noted
Helicopter landing pads.	Noted
Jetskis are not allowed in this area but still come.	Noted
The Coast Path will be moved inland due to erosion at points.	Noted

WORKSHOP 3	
Wednesday 5 th April 9.15-1pm. – Committee Rooms A/B, Neath Civic Centre SA11 3QZ	
Attendees Olwen Maidment, NRW Sean Warrington, Porthcawl Harbourmaster James Davies, Tata Steel Georgina Brooks, Tata Steel Gillian Morgan, Local Fisheries Action Group/Swansea Bay Port Health Authority Ceri Morris, Planning Policy Manager, Neath Port Talbot (NPT) CBC David Morris, Planning Officer, NPT CBC Richard Matthams, Bridgend CBC	
Comments	Study team response
SCA 8	
Submerged forest pattern should be described. It is complex and is exposed intermittently depending on sand movement.	Noted
Oystermouth Castle – prominent? (one comment).	Noted
Note rowing from Mumbles.	Noted
Forces for change	
New development at Mumbles including under cliff – high flats and mixed use proposal	Noted
Refer to future impact of tidal lagoon in more detail.	Noted
SCA 9	
Natural habitat in steel works is salt tolerant coastal grassland- should the steelworks therefore be included within the SCA.	The coastal grassland habitat is not a sufficient justification in itself to change the inland boundary of the SCA. No change is proposed.
Note there are two dredged channels to docks /Afan mouth.	Noted
High recreational use on the east side of Neath estuary – walkers, kite surfing, scrambling (anti-social use)	Noted
Rag and lug worm beds used for bait digging	Noted
Visual impact of solar farm and wind farm on hillsides backcloth.	Noted
Note pathways for migratory fish up both estuaries– sea trout and salmon.	Noted
Though porpoises in the area, it is not included in recently proposed SAC.	Noted
Forces for change	
Refer to future impact of tidal lagoon in more detail.	Noted
Onshore and offshore renewables.	Noted
SMP holding sea line at Aberafan, whilst the steelworks have privately funded coastal protection.	Noted
SCA 10	
Adjust boundary to exclude coastal dunes at western edge.	The western boundaries to the north

	and south of the river include inlets and related salt marsh which are defined in the intertidal dataset. These are associated with the estuary rather than the bay. Dunes may be encroaching on the salt marsh from the west but this is best described in the text rather than amending the boundary. There is a long narrow tongue of relict dunes north of the salt marshes which form part of Crymlyn Burrows. There is not sufficient reason to include this in SCA 9 as it is not associated directly with the Swansea Bay coast unlike the main body of the dunes to the west.
Coastal path is a key feature and very well used by walkers, bladders, dog walkers, buggies – difficult to manage access and parking to exclude anti-social users such as scrambling bikes.	Noted
Note dramatic visual impact on floodplain grazing marsh when flooded in spring tides.	Noted
Some large ships still occasionally using Neath Abbey docks for scrap metal export.	Noted
Giant's Grave wharf is used by the Tata steel works (two ships a week) for coil and scrap to Europe. The wharf is also used for importing sand and gravel occasionally.	
<i>Forces for change</i>	Noted
Development interest in old warehouses next to the river near the M4 for new employment uses.	Noted
Fly grazing on salt marsh may affect flood management.	Noted
SCA 11	
Scarweather anemometer mast is now dismantled (last two months).	Noted
Hugo Bank has shifted 180 m and navigational marks may be moved or just have wreck marker (as wreck just under low tide).	Noted
Santampa is a key wreck of historic interest, with interpretation on coast path.	Noted
Area is popular for scramblers towards steelworks.	Noted
Kenfig Dunes should be noted as a registered historic landscape.	Noted
Tata own the beach (Morfa) to low water mark.	Noted
<i>Forces for change</i>	
Dune succession and scrubbing over. Remedial works to remove scrub to encourage movement and diversity.	Noted

'Tarmac beach' at Porthcawl to be replaced by stepped edge (as Blackpool) but this will still not be encouraged as a bathing beach.	Noted
Convalescent home by golf course will be developed as apartments – high visibility and more noticeable than the golf club buildings.	Noted
Potential renewable energy projects offshore and onshore.	Noted
SCA 12	
Porthcawl harbour now has lock so does not dry and has 70 berth marina.	Noted
Fairy Rock does not always dry.	Noted
Tusker Rock (outside area) always dries.	Noted
Jennings building at harbour was used for coal and wood storage, may be converted for live/work apartments.	Noted
3 commercial fishing boats in harbour – catch ray, bass, dover sole etc	Noted
Reference in SMP to work on east side Sandy Bay probably means edge of Newton Bay.	Noted
Note slipway in harbour enables power boat and jet ski launch.	Noted
Jetskis and other powerboats emanate from Newton Club outside the area to the east.	Noted
Slipways should be mentioned throughout the report as a key characteristics.	Noted
<i>Forces for change</i>	
Maritime Centre – Cosy Corner – likely redevelopment.	Noted
Possible redevelopment of car park area (allocated).	Noted
Funfair will be redeveloped in due course.	Noted
WORKSHOP 4	
Thursday 6 th April 2017 9.15-1pm. – Committee Room 3, Civic Centre, Swansea, SA1 3SN	
Attendees Gordon Howe, Gower Society John Cooper, Mumbles Community Council Mike Sweeney, CCS Drainage and Coastal Management Paul Thornton, South & West Wales Wildlife Trust Sarah Jenkins, CCS Planning Policy Team Deb Hill, CCS Nature Conservation Team Judith Oakley, CCS Nature Conservation Team Jane Lammier, CCS Development Management Team Mike Scott, CCS Gower AONB	
Comments	Study team response
SEA AREAS	
SCA 13	
-	-

SCA 14	
Possible seabed turbines?	Noted
SCA 15	
Wilderness feeling from coastal views, with islands in background – eg Steepholm, Lundy.	Noted
SCA 16	
Include summary of potential impacts of tidal lagoon.	Noted
Note sea dumping area would have to move if/when tidal lagoon implemented.	Noted
Note that Oyster Ledge extends into the area.	Noted
Note large common oysters known locally as Swansea Oyster? Possibly large in the past because of sewage outfall? Apparently these are the common species.	Noted
Note offshore gasification license for trial (ask WG for more info).	Noted
SCA 17	
Check this is an anchorage area.	Noted
SCA 18	
See notes on oyster bed above- apparently oysters may not have taken due to other uses.	Noted
The area is within the primary coastal view from many key locations in Gower.	Noted
Note rough seas when wind is over the tide.	Noted
Housing, where elevated, makes strong visual impact when viewed from the sea.	Noted
View to Mumbles and hills behind are a key feature.	Noted
SCAs 19, 20	
Suggested name for SCA 19 : Bristol Channel South of Helwick. (Later acknowledged that the series of names of offshore areas was consistent and logical).	Noted. No change.
Dredging is limited to Noble Bank at present	Noted
Some 'licensed' dredging areas are not currently in use eg Helwick.	Noted
Tidal flows and currents are significant.	Noted
Sand bars are dynamic – always changing	Noted
Views to and from the area from the Gower are key as the sea is perceived as a 'wilderness'.	Noted
COASTAL SCAS - ADDITIONAL COMMENTS	
SCA1	

0.5 m rise in sea level will mean that the estuary seabed will rise 0.5m which will backup further up the river course/estuary.	Noted
Forces for change should include sediment deposition.	Noted
SCA 2	
Sand moves dynamically- deposition on Pembrey coast and erosion around Whiteford Point/Broughton.	Noted
Threat to exposed submerged forest around Broughton.	Noted
SCA 3	
Note breach of the sea wall and inundation of marsh at Cwm Ivy.	Noted
Planning impacts must be considered for development from either side of the Burry Inlet re impact on other side.	Noted
The open nature of the estuary means that <u>any</u> coastal development has big impact.	Noted
The impact of development night and day are important – consideration of dark skies needed.	Noted
The area provides an important dark gap/open space at night.	Noted
SCA 4	
Rhossili is one of most photographed beaches in the world eg at sunset.	Noted
The National Trust have acquired the car park at Rhossili and are carrying out improvements/enhancing the commercial operation.	Noted
Caravan sites have larger caravans, better condition caravans, but are intrusive such as at Hillend.	Noted
The southern end of the old interglacial beach is eroding.	Noted
End of Worms Head is important resting area for seabirds and haul out for grey seals.	Noted
SCA 5	
Amazing sense of remoteness.	Noted
Surfers have been using the coves in this area for at least 50 years.	Noted
Note survey of Helwick Sands to be done shortly to inform study of paleolandscapes.	Noted
SCA 6	
Caravans at low level make less impact than on elevated slopes.	Noted
Coastguard hut at Three Cliffs an eyesore reducing tranquillity/naturalness.	Noted
Jetskis destroy tranquillity.	Noted
New style of houses with larger units and glass fronts have greater visual impact.	Noted

SCA 7	
Sound of foghorn at Mumbles to be noted.	Noted
SCA 8	
Intertidal zone should be described in more detail.	Noted
Marram grass and fences should be included in the description.	Noted
Note medieval fish traps and general richness of marine archaeology.	Noted
Redevelopment of Civic Centre may have major impact.	Noted
The effect of the tidal lagoon should be stated in more detail, both in visual terms but also on the effect on coastal processes/sedimentation.	Noted
Note that the rise in sea level will also pose threat to Blackpill, backing up the watercourse with associated flooding.	Noted
Beach litter is a problem on Swansea Beach (also on other beaches such as Llangland, Whiteford, Rhossili, Porthcawl).	Noted
SCA 9	
Porpoises and sewin common especially in deep water channels which are used for feeding.	Noted
Note three sewage outfalls to bay, and resulting detritus on beaches.	Noted
The effect of the tidal lagoon should be stated in more detail.	Noted
SCA 10	
Visual gateway to the Mumbles	Noted
Overall	
Proposed SCA for porpoise should be put in (Carmarthen Bay)	Noted
Porpoise feeding area esp at 10-120 m depth, see hotspots in study by J.A.Oakley et al (Elsevier 22 September 2017). <i>(Applies to SCAs 2-9, 16-20)</i>	Noted
Intertidal areas should be described in more detail.	Noted
Suggest that all SINCs marked on maps/noted.	SINCs are small-scale/fine grain local nature conservation designations which are not mentioned in seascape character assessments at this scale eg Pembrokeshire and Snowdonia. No change proposed.
Currents should be mentioned, possibly in key characteristics.	Noted

GENERIC ISSUES RAISED AT WORKSHOPS	
Note naming of areas should be consistent from west to east.	Noted
Note impact of river water quality – pollution from run off especially from farming and food processing.	Water quality of beaches will be noted in the descriptions- NRW dataset.
Water quality is high in many places especially the south of Gower – not only reflected by Blue Flag as this is a designation associated with visitor facilities etc.	As above.
Tidal flows – make sure these are reflected in descriptions including tidal races, wind over tide effects etc.	Noted
Jetskis and other new motorised craft disturb tranquillity.	Noted
Refer to mineral ‘extraction’ rather than dredging.	Noted
Refer to offshore renewable energy ‘potential’ rather than ‘opportunity’ ie neutral.	Noted
Sea level rise is inevitable, just the timing is unknown.	Noted
If sea level rises, sedimentation will reflect that and rise accordingly, filling the existing estuaries.	Noted
In sea areas consider views from the area as well as land views to the area.	Noted
Movement of sand banks is dynamic and probably always has been – so biogenic forest and archaeological features of interest are exposed or covered in a dynamic pattern.	Noted
Dark skies – Gower and some other coastal areas have dark skies, so new development or lighting, or glass fronted housing, golf ranges etc detract from this contributor to tranquillity	Noted
Caravans are getting larger (double units), with more glass, and often white in colour which are highly visible.	Noted
Conversion of bungalows to larger modern houses with glass panoramic windows mean they become much more visible from coast and sea.	Noted
Open sea areas are a ‘wilderness’, especially in association with distant views to coastal hills and islands.	Noted
Water safety initiatives by RNLI include large huts eg at Three Cliffs Bay – these detract from visual quality/remoteness.	Noted
Intertidal habitat information could be strengthened in descriptions.	More detailed descriptions of the intertidal area to the level of detail appropriate for a character study will be included as necessary. Where these will be brought into the key characteristics.
Note changes to the coast path in places eg SCAs 5,6 7.	Noted
Marram grass stabilisation of sand dunes eg Swansea Bay may create secondary long term impacts on deposition.	Noted
Note proposed SAC for porpoises in Bristol Channel/Carmarthen Bay.	Noted
Note populations of short-beaked common dolphin eg Port Eynon Bay, Worms Head to Helwick Banks and Carmarthen	Noted

Bay esp May-Sept – pods of 15-40.	
Note rafting seabirds in Carmarthen Bay and off Worms Head eg manx shearwater, guillemot, gannets, razorbill.	Noted
Tidal lagoon in Swansea Bay will have far reaching impacts – make appropriate references in report.	The implications of the proposed tidal lagoon on seascape character will be included in the forces for change section of SCAs 8 and 9.
Marine litter is significant – plastic particles in sand as well as larger objects eg Swansea Bay.	this
Potentially consider the impact of Brexit eg on project funding and environmental protection/regulations.	Noted

Appendix D
Web consultation

RESPONSES TO ONLINE SURVEY

A website was constructed in Welsh and English to facilitate responses to draft seascape character areas (SCAs) and descriptions.

The information provided on the website was:

- Overview maps showing all SCAs
- SCA Maps showing boundaries.
- SCA Summary descriptions
- SCA Key characteristics
- SCA preliminary forces for change

The detailed descriptions for each SCA which underpinned the summary information was not presented and therefore some comments may have already been covered by these detailed descriptions.

The responses were structured in a Survey Monkey response form for each SCA. Whilst respondents were requested to state their name and contact details to verify their inputs, all results have been anonymised.

The website was available for comment for 6 weeks between 13 March 2017 and 21 April 2017 although some comments were received up to 26th April 2017. The website was promoted by the four steering group local planning authority members and NRW. Links to the site were located in the City and County of Swansea and Neath Port Talbot CBC websites.

In total there were 21 responses in English to various SCAs. There were no responses in Welsh. 10 SCAs were commented on, and 10 SCAs (three onshore and 7 offshore) were not commented on (SCAs 7, 10, 12-17, 19, 20).

The following information is a verbatim record of all responses received with additional responses from the study team.

Key to study team responses:

- Noted- point will be considered in revising or adding to text or figures for the draft final report.
- Any other comment- major point which requires justification for action

SCA 1 : Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	2	1	1		1	1	1	1	1	1	2	

Suggestions on name	Study team response
Three Rivers Estuarine Complex	Valid alternative but current name is more precise and more widely identifiable. The Three Rivers name is referred to in the text. No change to the title is proposed.
Suggestions on boundary	
The boundaries seem to conform with the Three Rivers Estuarine Complex which is appropriate, the only limitation is that the end of Whiteford Burrows where there is currently a spit, straddles two different boundaries. This may be appropriate but wanted to raise as a point.	Noted
Comments on description	
There is no mention of nature conservation designations and the fact that Carmarthen Bay is a European Marine Site including multiple designations and features. Please see the Regulation 35 package for Carmarthen bay European Marine Site available on NRW's website: https://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-of-land-and-seas/designated-sites-search/?lang=en	Noted.
Comments on forces for change	
-	-

SCA 2: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	4	3			2	1	2	2	3	1	3	1

Suggestions on name	Study team response
Pembrey, Pembrey Sands	Name is marine based and consistent with other SCA names. No change proposed.
Suggestions on boundary	
Broughton Bay/Whiteford Sands from Whiteford Point and south should be moved to SCA4 I mixed my notes between SCA1 and SCA2 (sorry). The point I raised regarding the spit at Whiteford is relevant to for consideration in relation SCA2 not SCA1.	SCA includes outer bars of two estuaries and related sandy beaches on eastern edge of Carmarthen Bay. Suggested division relates to coastal character and access rather than marine character. No change is proposed.
Comments on description	
Mention important submerged prehistoric forest and peat beds in Broughton and Whiteford intertidal region.	Noted
Comments on forces for change	
Risk of further erosion/exposure of peat beds.	Noted

SCA 3: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	2	1		1	2		1	1		2		2

Suggestions on name	Study team response
-	-
Suggestions on boundary	
Burry Port Harbour should be moved to SCA2, otherwise it's a panhandle like Florida!	Assume mean Pembrey Harbour. This is more closely associated with Burry Inlet than Carmarthen Bay. No change proposed.
Comments on description	
Whole north Gower coastline rich in archaeological sites – Iron Age Hill forts, medieval castles, churches. Industrial heritage of north Gower coast – Early Copper works at Penclawdd, with canal and dock. Visually - the dock at Penclawdd is Scheduled Monument. Second World War Military firing range history of north Gower salt marsh area – see Cadw report. Cwm Ivy – recent reversion to salt marsh – Break in sea wall and flooded by sea. Cultural – Sir Karl Jenkins is from Penclawdd, North Gower (southern coast of this area). Karl Jenkins is the most performed living composer in the world today! Note Llanelli Harbour.	Noted
Comments on forces for change	
-	-

SCA 4: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	3	2	1		3		3			3	1	2

Suggestions on name	Study team response
-	-
Suggestions on boundary	
-	-
Comments on description	
<p>The peninsula is owned and managed by the National Trust – this sentence is misleading and implies that the whole Gower peninsular is own by NT. Part of SCA 4 is privately owned. Tidy up sentences on axe head at Rhossili etc. Caravan holiday experiences are now part of our cultural heritage.</p> <p>I attended the workshop on the 30th March in The Guildhall so most of my comments on the areas from Rhossili to Mumbles will be recorded but I just wanted to make the general comment to all areas that it may be worth including the Bathing Water classification for an area (it'll have to be based on the major beach in the area). See CCS or NRW websites for this information. I would avoid mentioning awards as this depends on which beaches are chosen to apply for awards not on water quality.</p> <p>Need to clarify that the peninsular owned and managed by National Trust is Worms Head (could be confused with Gower) No mention of Burry Holmes at the western end of the beach.</p>	Noted
Comments on forces for change	
<p>Risk of further major cliff erosion at Rhossili and exposure of archaeological features.</p> <p>What MOD use?? Pressure from visitors also at Llangennith especially in good weather- very busy camp site and car park. Previous efforts at dune</p>	Noted

management left a legacy of dangerous and unsightly broken wire fencing.	
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SCA 5: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	1	1			1		1			1		1

Suggestions on name	Study team response
-	-
Suggestions on boundary	
-	-
Comments on description	
Check if prehistoric tree stumps are actually in this area or SCA6.	Noted
Comments on forces for change	
-	-

SCA 6: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?		
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments	
Summary data	1	1				1		1			1		1

Suggestions on name	Study team response
Change it to Port Eynon and Oxwich.	Name is marine based, naming bays, and consistent with other SCA names. No change proposed.
Suggestions on boundary	
-	-
Comments on description	
Important archaeological deposits in eroding peat beds at Port Eynon bay - includes rare human footprints as well as prehistoric tree stumps and finds. Visually - Add Second World War coastal defence/Chain Home Low radar station, an anti-invasion defence measure designed to guard against both low-flying enemy aircraft and shipping in the Bristol channel. Scheduled Monument on Oxwich Point.	Noted
Comments on forces for change	
Highlight the importance of protecting archaeological assets where possible from damage by erosion, flood, visitor footfall, changes in agricultural practices, etc. Systematic monitoring needed and increased urgency of recording before their destroyed. This goes for all areas.	Noted

SCA 8: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	4	1	3		3		3	1		4		4

Suggestions on name	Study team response
-	-
Suggestions on boundary	
The location of the eastern boundary may be better aligned to the eastern breakwater of Swansea docks, rather than dissecting the area to the east of the eastern breakwater. The reasoning for the current boundary is unclear.	The boundary follows the marine character type boundary based on seabed sediment with slightly gravelly sand to the west and sand to the east. No change proposed.
Comments on description	
<p>Mention archaeological importance of peat deposits in the bay containing Bronze Age and Iron Age trackways. Also areas of submerged prehistoric forests. and large number of finds of all periods found in the bay.</p> <p>In terms of the sediment character of this area, NRW's view is that 'the foreshore is predominantly sandy with areas of mud, gravel and outcrops of Holocene silts, peat and bedrock', this is informed by expert advice provided by NRW from Kenneth Pye Associates Ltd. There is also a number of low amplitude sand bars however it's unclear whether detail of this kind is required (same goes for the other area descriptions in terms of level of detail).</p> <p>Dredging of entrance to ~River Tawe very important due to silting.</p>	Noted

<p>Commercial fishing from small inshore vessels has been a traditional activity in the Bay for centuries and their continued use of the bay is a distinctive characteristic. Oysters: Mumbles and Oystermouth was the home of a thriving native oyster fishery that collapsed due to over fishing, disease and poor water quality. The population is now subject to restoration efforts at Mumbles.</p>	
<p>Comments on forces for change</p>	
<p>Monitor condition of archaeological features.</p> <p>Please see comments provided for SCA 9 regarding reference made to the Swansea Bay Tidal Lagoon Project which also apply to this description.</p> <p>Oyster fishery - 'Historical over fishing' 150+ years ago compounded by poor water quality from the copper works, and then by disease that affected all of Europes oyster beds in the 1920's. Would like to highlight the restoration work for the oyster fishery at Mumbles which is reviving cultural values in Mumbles bay by leading the way in combining aquaculture with the restoration of the native oyster. Importance to the commercial fishing sector should be further highlighted.</p> <p>Commercial and leisure fishing should not be considered as a force for change of the seascape. As a fisheries management specialist I find this really quite puzzling. We cannot underestimate enough the potential impacts on the sediment geology and biodiversity of the tidal lagoon should it be built. This will be a fundamental change to the seascape but will also have secondary effects on sediment movements and tidal streams. Water treatment and other discharges are major forces for change (water quality) and influences, these should be acknowledged in the same way that mineral extraction and offshore energy have been.</p>	<p>Noted</p>

SCA 9: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	2		2		1		1			1		2

Suggestions on name	Study team response
-	-
Suggestions on boundary	
-	-
Comments on description	
<p>Summary description The SCA forms the eastern part of a wide, sweeping shallow muddy sand bay with wide beaches exposed to the prevailing south westerly winds. The River Neath and River Afan enter the bay here. There are dunes either side of the Neath and Crymlyn Burrows is an SSSI. There is a dredged channel with training walls to the Neath and a deep dredged channel serving the tidal harbour at Port Talbot steelworks. The bay is used by commercial vessels, mainly to Port Talbot, and to an extent by leisure boats but less intensively than to the west. The enclosing hills in the hinterland are relatively unspoilt and form an important backcloth to the bay. The primary visual foci are the huge steelworks structures and cranes. Key views are from the popular Aberafan seafront and beach across the bay to the Mumbles.</p> <p>Key characteristics • The eastern part of a wide shallow bay exposed to the prevailing south westerly winds. • The Rivers Neath and Afan enter the bay and their material combined with the transported coastal sediment form sand banks and wide beaches of muddy sand giving way to sandy mud further out. • The beaches are backed by sand dunes around the Neath estuary and Crymlyn Burrows is an SSSI. The estuary in Baglan Bay is</p>	Noted

<p>used by small over-wintering waders. • The coast encompasses an important past and present industrial landscape ranging from Swansea Docks, oil storage and refining, and Port Talbot steelworks and docks. Historic marine use has included the export of coal, the import of crude oil from the Middle East as well as coking coal, minerals and ores to Port Talbot. Port Talbot docks imports 2.5m tonnes of coal and 5.5m tonnes of iron ore per annum for the steelworks as well as the handling steel products, aggregates and other industrial uses. • The oil storage and refining uses at Swansea have been replaced by the new Swansea University bay campus to the north and by a power station, paper works and other uses to the east. The operation at Swansea Docks however still involves the handling of coal, aggregates, specialist project cargoes such as wind turbines, wood pulp, recycled products and other industrial uses. • Aberafan beach and seafront were once very popular as a bucket and spade resort but are now popular for day trips/short visits having undergone significant environmental improvements. • There is a deep dredged channel to Port Talbot tidal harbour serving the steelworks which is one of the few in the UK that can handle vessels up to 170,000 dwt. • There is a dredged channel to the River Neath which has training walls on both sides which is used by a few commercial and leisure vessels. • The River Afan is tidal and offers only tidal moorings for small craft and access to the adjoining old docks. • Overall this side of the Bay is used less for leisure than the western side but there is some recreational fishing. • Visually, the area forms part of the smooth wide arc of Swansea Bay and feels large-scale, although partly enclosed by the relatively unspoilt hill backcloth of Kilvey Hill and the coalfield plateau scarp slopes including Mynydd Dinas and Mynydd Brombil, although the latter now has a windfarm on it. • The primary foci are the huge industrial structures of the steelworks, reinforced by the wind turbines and the cranes in the tidal harbour. These contrast with the flat, suburban character of the Sandfields estate, behind Aberafan beach. • The wide sandy beach is the key feature. The variety of the hinterland land cover is unified by the wide sweeping beach and the simple unspoilt surface of the bay. • The dunes either side of the estuary, along with the beaches, offer some sense of escape from the busy hinterland. • Views are primarily enjoyed from Aberafan beach which looks across the bay to Mumbles Head.</p>	
<p>Comments on forces for change</p>	
<p>It is stated that the Swansea Bay Tidal Lagoon has been approved, however there is a need to provide a more specific description. The statement in it's current form is slightly misleading. Swansea Bay Tidal Lagoon has been granted a Development Consent Order however there are a number of other consents under determination at present. The current statement needs to be revised to reflect this.</p> <p>Please find revised forces for changes below: Forces for change These can be divided into: • Natural processes • Visitor pressure • Marine use- commercial and leisure fishing • Offshore energy or minerals • Development pressure – in particular including the Strategic Regeneration Area at Port Talbot Harbourside and the Strategic Employment Site at Baglan (with a focus on energy-related development) within Neath Port Talbot and the proposed Fabian Way Corridor Mixed Use Strategic Site which straddles the Neath Port Talbot and Swansea</p>	<p>Noted</p>

<p>administrative area which will be allocated in the Swansea Local Development Plan (LDP) and for which more detailed Supplementary Planning Guidance (SPG) is under preparation. • Land management changes • MOD use Initial thoughts are: The area is sensitive to sea level rise and increasing severity of weather. The SMP long-term objectives are to hold the line adjacent to the Swansea and Port Talbot Docks, the new University campus, Aberafan seafront and Port Talbot steel works in order to mitigate the effects of sediment erosion and accretion through wave disturbance and protect properties through maintaining and upgrading existing defences. Swansea Dock has a sea wall which acts as a defence along with the lock gates whereas Port Talbot Dock is surrounded by land so only the lock provides a defence function. In both cases ABP is the owner and operator, The dredged channels are the responsibility of the Neath and Port Talbot port authorities. The SMP long-term objectives along the coastal frontage of the Baglan and Crymlyn Burrows is of managed realignment to enable the dune system to function naturally with minimal interference. There may be a need for secondary setback defence in the longer term if there is potential for flooding of hinterland assets such as the power station. The Swansea Bay Tidal Lagoon which has been approved would change the character of Swansea Bay if implemented. It would remove its feeling of unity splitting the bay into three components, and would remove the unified sweeping character created by the wide beaches along the shore. Other forces for change include: • The future of the steel works that are highly prominent in this area which face an uncertain future, subject to global economics. • The ongoing major SA1 development and the expansion of this to the east of Swansea Docks between the Docks and the Swansea Bay Campus (on land to be allocated as a mixed use strategic development site in the Swansea LDP and for which more detailed SPG will be prepared.</p>	
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SCA 11: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	1	1			1		1			1		1

Suggestions on name	Study team response
-	-
Suggestions on boundary	
-	-
Comments on description	
This area of Kenfig and Merthyr Mawr is included in the Register of Outstanding Historic Interest in Wales. More info on GGAT website. Areas of archaeologically important peat deposits containing evidence of human and animal activity. Finds of all periods.	Noted
Comments on forces for change	
	-

SCA 18: Responses to online survey

	No. responses	Overall, do you agree with our assessment of this area?			Do you agree with the name we've given for this area?		Do you agree with the boundaries we've given to this area?		Do you agree with the description we've given to this area?		Do you agree with the 'forces for change' we've identified in this area?	
		Yes	Mostly agree	Mostly disagree	Yes	I have a suggestion	Yes	I have a suggestion	Yes	I have some comments	Yes	I have some comments
Summary data	1	1			1		1		1			1

Suggestions on name	Study team response
	Noted
Suggestions on boundary	
	Noted
Comments on description	
	Noted
Comments on forces for change	
Tourism is key in this section of the Gower with two of the councils three blue flag beaches located within. Tourism and its increase could be a force for change.	Noted

Appendix E

Cultural benefits and services

APPENDIX E: CULTURAL BENEFITS AND SERVICES

1. Introduction

- 1.1. Recent legislation in Wales enshrines the ecosystem services approach into policy. This Well-being of Future Generations (Wales) Act 2015 sets out seven well-being goals which include a resilient Wales, which maintains and enhances healthy functioning ecosystems, and a healthier Wales in which people's physical and mental well-being is maximised. The Environment (Wales) Act 2016 also states that natural resources should be used in a way that maintains and enhances the resilience of ecosystems and the benefits they provide. NRW are rolling out through Sustainable Management of Natural Resources (SMNR) delivery framework which includes the State of Natural Resources Report (SoNaRR) and will include Area Statements. This study will inform future reporting.
- 1.2. As part of implementing the legislation, a Natural Resources Policy Statement (Welsh Government, 2015) has been prepared. It adopts an ecosystem services approach. These can be divided into four categories:
 - Supporting services e.g. nutrients cycling, soil formation
 - Provisioning services e.g. fish, crops
 - Regulating services e.g. flood control
 - Cultural services.
- 1.3. Cultural services are most relevant to a seascape character assessment. Cultural benefits and services cover the non-material benefits that people obtain from ecosystems such as spiritual and religious enrichment, cultural heritage, recreation and tourism and aesthetic experience.
- 1.4. The UK National Ecosystem Assessment (UKNEA), 2011, defines 'ecosystem cultural services' as *'the environmental settings that give rise to the cultural goods and benefits that people obtain from ecosystems'*. These involve *'a range of complex cultural practices, such as the development of institutions, the application of capital, and human processes involving memories, emotions, the senses, and aesthetic appreciation.'*
- 1.5. It notes that *'encounters with the natural world maintain their fascination for very substantial numbers of people'* and that *'daily contact with nature is part, still, of being human'*. Interactions with green space, for example, have been linked with longevity and decreased risk of mental ill-health, and *'children's relationship with nature is a fundamental part of their development.'*
- 1.6. Evidence is noted that *'every environmental setting is capable of being interpreted as possessing a distinctive sense of place which can contribute to a range of human value needs.'* What are described as *'heritage goods'* can *'contribute to a sense of identity, place, freedom and understanding.'* It goes on to suggest that *'environmental settings are valuable surroundings for outdoor learning where engaging with nature can lead to enhanced connectedness to nature and increased ecological knowledge.'*
- 1.7. The study area's seascape offers these services in a number of ways. These are set out in **Table 1** as a framework for the brief descriptions for each seascape character area (SCA).

Table 1 Ecosystem cultural services provided by seascape

<i>Generic service category</i>	<i>Typical components in seascape</i>
Leisure / recreation	<ul style="list-style-type: none"> • improvement of health and well-being through various activities • walking the Coast Path, rambling, hill walking • sailing, canoeing, rowing, windsurfing, surfing, kite surfing • swimming, diving, snorkelling, rock-pooling, beach activities • angling, shore-based and from boats • wildlife boat trips • climbing, coasteering • horse riding/beach riding • land yachting • power boating, waterskiing, jet-skiing • parks and play areas
<i>Generic service category</i>	<i>Typical components in seascape</i>
Spiritual / religious	<ul style="list-style-type: none"> • improvement of well-being • connection with sense of remoteness, tranquillity and timelessness/time depth • connectedness with nature • places of worship • places with particular sense of identity for local communities
Artistic / cultural heritage	<ul style="list-style-type: none"> • archaeological features such as castles, promontory forts, paleolandscapes • historic sites and buildings • associations with artists or writers • environmental education activity • festivals and events • food and farming traditions • craft traditions • museums, galleries, and visitor facilities to interpret the environment and cultural heritage
Natural heritage	<ul style="list-style-type: none"> • improvement of well-being through connection with nature • interactions with or observation of wildlife (for example bird watching, seal watching, dolphin and porpoise watching) • interaction with the natural coastal and marine environment as a leisure activity • diversity of views, sense of spaciousness, and appreciation of aesthetic qualities

Appendix F

Forces for change

APPENDIX F: FORCES FOR CHANGE

1. Introduction

1.1. The seascape of the study area is undergoing change through a number of natural and man-related forces. These forces for change will be explored and defined to ensure consistent use and to avoid repetition in the individual SCA descriptions.

Forces for change

1.2. Whilst it is acknowledged that the study area covers a wide and varied series of seascapes, the Gower AONB Management Plan Consultation draft 2014 is a starting point in identifying forces for change, noting activities and pressures. These include:

- Primary Industries - eg fishing, minerals, agriculture
- Tourism
- Transport
- Utilities and Communications
- Climate change
- Development of offshore activities
- Housing
- Community facilities and local services

1.3. Not all of these relate directly to seascape character.

1.4. The Pembrokeshire Coast National Park Seascape Character Assessment (2013) identified a series of factors which were relevant to seascape and generic (see Appendix A). These were subsequently used in the Snowdonia seascape study (2013) to provide national consistency. The factors cover the Gower AONB categories and were also agreed by this study's steering group to help prompt participants in the stakeholder consultation on the seascape character areas. They are therefore considered suitable to be carried forward into the final report. These are:

- Natural processes/climate change
- Visitor pressure
- Marine use - commercial and leisure fishing
- Marine use - energy and minerals extraction
- Development pressure
- Land management changes
- MOD use

1.5. Both existing ongoing and potential future changes will be considered.

Special qualities

1.6. The forces for change will have an effect on the seascape character of the study area. This character can be broken down and into a series of qualities. In the Pembrokeshire study the seascape qualities were considered consistent with the special qualities defined for the National Park. In the case of this study, there are no predefined special qualities for the whole study area. The Gower AONB defines

special qualities under a series of themes including biodiversity, geology, landscape, seascape, archaeology, tranquillity, public rights of way, access land and beaches. Some of these are effectively headings for organising text rather than landscape/seascape special qualities in themselves. The seascape special quality text does mention the classic coastal views of Gower and also views of the coast from the sea.

- 1.7. From the landscape/seascape assessment perspective, landscape designation guidance (*Guidance for assessing landscapes for designation as National Park or AONB in England, Natural England, 2011*) is useful in helping to define what influences special qualities. In terms of natural beauty the criteria are:
 - Landscape quality - this is a measure of the physical state or condition of landscape
 - Scenic quality - the extent to which the landscape appeals to the senses (primarily, but not only, the visual senses)
 - Relative wildness - the degree to which relatively wild character can be perceived in the landscape makes a particular contribution to sense of place
 - Relative tranquillity - the degree to which relative tranquillity can be perceived in the landscape
 - Natural heritage features - the influence of natural heritage on the perception of the natural beauty of the area
 - Cultural heritage features - the influence of cultural heritage on the perception of natural beauty of the area and the degree to which associations with particular people, artists, writers or events in history contribute to such perceptions.
- 1.8. Other criteria (for National Parks) relate to opportunities for understanding and enjoyment eg the degree and type of access.
- 1.9. All these factors are relevant to seascapes in general and the study area in particular. However, while some SCAs will have *special* qualities, others may not. In order to take into consideration the Gower AONB special qualities, the potential qualities elsewhere in the study area, and showing consistency with the Pembrokeshire seascape study, the following list of *potential* special qualities is proposed:
 - coastal/seascape scenic quality
 - views to and from the sea/water
 - diversity of seascape/landscape
 - sense of place
 - tranquillity and wilderness
 - diverse geology
 - rich habitats and biodiversity
 - rich archaeology and built heritage
 - strong cultural associations eg art, literature and traditions
 - access to the coast or sea- potential for good access improving people's well-being and health

- valued beaches- beaches which are popular and valued for their uses such as swimming, surfing or walking and/or for their scenic qualities

Forces for Change Matrix

1.10. The list above is proposed to be combined with the forces for change list to produce a matrix showing the likely issues for each SCA (see sample below). The main points are explained in more detail in text.

Forces for change							
Potential special qualities	Key forces for change						
	Natural processes/ climate change	Visitor pressure	Marine use- commercial and leisure fishing, aquaculture	Marine use- energy and minerals/ aggregate extraction	Develop- ment pressure	Land manage- ment changes	MOD use
Coastal/seascape scenic quality							
Views to and from the sea/land							
Diversity of seascape/landscape							
Sense of place							
Remoteness, tranquillity and wildness							
Distinctive geology /coastal processes							
Rich habitats and biodiversity							
Rich archaeology and built heritage							
Strong cultural associations							
Access to the coast or sea							
Valued beaches							
Key							
		Existing or potential change that may affect the selected special quality					

Appendix G

Sensitivity of seascape character areas

APPENDIX G: SENSITIVITY OF SEASCAPE CHARACTER AREAS

1. Introduction

- 1.1. The study defines sensitivity within the framework of Countryside Agency Topic Paper 6 and LCA guidance. To be consistent with the Pembrokeshire seascape assessment it examines the different characteristics of SCAs and where they may be more or less sensitive to development as well as their inherent sensitivity- see Table 2. This table acts as the framework for discussion of sensitivity to relevant forces for change for each SCA. The sorts of development that may occur are marine developments such as renewable energy (eg tidal lagoons, tidal stream, wave energy), aggregate extraction and aquaculture, and coastal developments such as the leisure/tourism e.g. caravan and chalet sites, housing and commercial development. Consideration of sensitivity to natural processes or climate change is not included.
- 1.2. Landscape designations and their associated value should be considered separate to judgements on sensitivity. Designations are derived through a number of criteria, some subjective, and necessarily involve consensus. Boundaries are placed along easily defined permanent features on the ground such as roads. As such, there can be areas of varying value within a designation, as indicated by LANDMAP studies, and also areas of varying sensitivity. However, it would not be surprising if there was an increased incidence of sensitivity in designated areas, such as the Gower AONB, due to their intrinsic characteristics.

Table 2: Existing factors affecting the sensitivity of seascape character areas

<i>Criteria</i>	<i>Factors that contribute to sensitivity</i>	<i>Factors that detract from sensitivity</i>
Coastal and hinterland form	Intricate, complex, rugged forms and dramatic headlands/ends of peninsulas Where great simplicity is the key characteristic and introduction of structures into very horizontal composition would compromise this. Gently sloping towards coast allowing views of near shore elements.	Flat, horizontal or gently undulating or indented coast. Simple forms Plateau or flat hinterland.
Scale	Small scale, enclosed, views to horizon limited by landform Introduction of an element of scale into previously un-scaled area Where scale is huge and smaller elements would detract	Large scale views, particularly where there are existing detractive elements and/or large-scale detractors.
Openness and enclosure	Where openness is a key characteristic and introduction of built elements would compromise this.	Unframed open views unimpeded by natural elements or features.
Seascape Pattern and Foci	Complex or unified pattern which would be disrupted by development. Important focal points eg headlands, distinctive sweeping beaches, and high hills. Open unspoilt views of the sea with no signs of	Simple pattern Lack of natural focal points Presence of existing vertical or other elements at sea

	development offshore.	including shipping/ferries.
Criteria	<i>Factors that contribute to sensitivity</i>	<i>Factors that detract from sensitivity</i>
Nature Conservation features	<p>Presence of marine habitats with high biodiversity.</p> <p>Presence of intertidal and coastal edge habitats with high biodiversity.</p> <p>Presence of BAP species or habitats.</p>	Limited range and extent of biodiverse areas.
Heritage features	<p>Presence of historic environment features (designated and non-designated).</p> <p>Presence of wrecks other submerged historic features and paleolandscapes with high potential for finds.</p> <p>Presence of coastal and island historic features such as forts, castles, chapels, monasteries, other buildings and structures and other heritage features which have a strong relationship with the coast and sea visually, physically or culturally.</p>	Limited number of heritage features
Cultural associations	Where there are strong collective cultural associations with the sea and coast through people and events and their expression through literature, art, music or other media. These can include religious connections, military connections, legends, books and poems, pictures, music, films, plays and other cultural media.	Where there are limited cultural associations.
Settlement/ Development pattern and foci	<p>Small scale, traditional, historic settlements and monuments. Small clustered villages.</p> <p>Lack of infrastructure</p>	Ports, industrial facilities, larger scale infrastructure, urban form, linear settlements
Movement	<p>Where stillness is a key feature</p> <p>Where/when movement is highly natural, irregular or dramatic (currents, tidal streams, waves crashing on exposed coastlines) and regular mechanical movement or presence of development would detract.</p>	<p>In busier areas where development movement relates to other forms of mechanical movement present e.g. commercial shipping, ferries, boats, cars, lorries, aircraft or to a lesser extent other movement eg crowded swimming and surfing beaches</p> <p>Where/when waves are gentler and slow, regular movement of development could complement lapping of waves.</p>
Aspect	<p>Development would interfere with views of sunrises and particularly sunsets</p> <p>Where turbines would be most often backlit,</p>	Development located away from sunrise and sunset positions

	<p>thereby increasing visibility.</p> <p>Front lit development which would be more prominent, especially from higher level views where the turbines can be seen against the darker sea.</p>	Development front lit
<i>Criteria</i>	<i>Factors that contribute to sensitivity</i>	<i>Factors that detract from sensitivity</i>
Exposure	<p>Sheltered and calm seascapes</p> <p>Where seascape is very exposed such that the perceived wild, elemental nature is a <i>key</i> characteristic and development would significantly change this perception.</p>	<p>Open, exposed seascapes which do <i>not</i> provide a perception of elemental or wild seascape character and development would be perceived as relating to these characteristics.</p>
How seascape is experienced	<p>From remote little use stretch of sea with little shipping or boat use.</p> <p>From secluded coastline, intimate coastal roads and footpaths.</p> <p>From important viewpoints and elevated positions where the focus is the view and not the activity.</p>	<p>From ferry/shipping.</p> <p>From main coastal, busy roads.</p> <p>Crowded beaches where focus is on beach activities.</p>
Remoteness, Tranquillity, Wildness	<p>Undeveloped seascape</p> <p>Wild character</p> <p>Highly natural, unmanaged</p> <p>Remote or isolated</p> <p>Tranquil</p>	<p>Highly developed seascape</p> <p>Highly modified / managed.</p> <p>Not remote</p> <p>Lacking in tranquillity</p>
Dark skies/ Lighting	<p>Where the area is unlit at night and is classified as such in dark skies study.</p> <p>Little impact of lights from sea and land traffic.</p> <p>Where lighting is from scattered small settlements, lighthouses etc and where marine development lighting would introduce a new, different scale.</p>	<p>Area is already well lit at night</p> <p>Lights of sea and land traffic or installations present.</p>

Appendix H

Glossary and abbreviations

GLOSSARY- TERMS AND DEFINITIONS

Seascape, marine and coastal processes terms	
<i>Term</i>	<i>Definition</i>
Abrasion	The mechanical wearing effect on rocks caused by corrosion. The abrading agent can take a variety of forms e.g. sand, pebbles or boulders moving across a rock surface.
Attrition	The mechanism by which the particle size of any material is reduced by friction during transport.
Biogenic	A feature that is created by living organisms, either animal or plant. Often applied to a reef which may have a peat origin.
Character	see Seascape character.
Characteristics	Elements, features and qualities which make a particular contribution to distinctive character.
Characterisation	the process of identifying areas of similar character, classifying and mapping them and describing their character. *
Classification	concerned with dividing the seascape into areas of distinct, recognisable and consistent common character and grouping areas of similar character together. It requires the identification of patterns in the seascape, created by the way the natural and human influences interact and are perceived and experienced to create character in the seascape.
Description	capturing the overall essence of the character of the seascape, with reference to geology, landform, bathymetry, habitats, use of the coast and sea, cultural associations etc, drawing out the ways in which these factors interact together and are perceived and experienced and are associated with events and people. *
Demersal	In relation to marine organisms: those which flourish on the ocean floor.
Elements	individual component parts of the seascape such as beaches, cliffs, submerged reefs, sea walls, groyne and rocky outcrops.
Eulittoral zone	Intertidal zone/foreshore extending from the spring high tide line to the spring low tide line.
Features	particularly prominent or eye-catching elements such as lighthouses, rock stacks and coastal cliffs.
Fetch	The distance of open water across which wind blows or over which wind generated water wave travels, unobstructed by major land obstacles. The amount of fetch helps to determine the magnitude and energy of a wave and therefore its erosional or depositional tendencies on neighbouring shorelines.
Hydraulic action	Force exerted by moving water on rocks eg air forced into cracks in solid rocks by breaking waves is capable of causing their disintegration by expanding the fissures.
Key characteristics	those combination of elements, features and qualities which optically important to the current character of the seascape and help give an area its distinct sense of place.

<i>Term</i>	<i>Definition</i>
Landward limits (of a seascape character assessment)	the distance which the seascape character assessment will expand onshore and inland. Such considerations relate to the mainland, peninsulas and islands, regardless of their distance out at sea. The extent is dependent on the purpose and/or scope of the assessment being undertaken.
Littoral	Pertaining to a shoreline.
Littoral Zone	Zone extending from just above the high tide mark as far as the edge of the continental shelf. This divided into three sub regions called the supralittoral, eulittoral and sublittoral zones.
Longshore drift	A general movement of beach material along the shoreline due to the effect of waves breaking obliquely on to the beach.
Pelagic	In relation to the environment: the open ocean as distinct from the ocean floor. In relation to marine organisms: those which flourish independent of the ocean floor and shoreline environments.
Perception	perception combines the sensory (that which we receive through our senses) with the cognitive (knowledge and understanding gained from many sources and experiences).**
Reef	A line of rocks or material in the tidal zone of the coast, submerged at high water but partly uncovered at low water.
Ria	Submerged coastal valley or estuary resulting from a rise of sea level, often associated with post-glacial coasts.
Saltation	Sediment transported by bouncing or hopping along a surface carried by water or wind.
Seascape	The definition of seascape has two definitions which are both relevant to the study: An area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land with sea, by natural and/or human factors. (Derived from European Landscape Convention, 2000). Landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other. (UK Marine Policy Statement, 2011, 2.6.5.1)
Seascape character	Seascape character is a distinct and recognizable pattern of elements and features in the seascape that makes one seascape different from another, rather than better or worse.
Seascape character assessment (SCA)	SCA is the process of identifying and describing variation in the character of the seascape, and using this information to assist in managing change in the seascape. It seeks to identify and explain the unique combination of elements and features that make seascape distinctive. *
Seascape character areas	these are single unique areas which are discrete geographical areas of a particular seascape character. Each has its own individual character and identity. These areas may be made up of a number of seascape types.
Seascape character	these are distinct types of seascape that are relatively homogenous in character. They are generic in nature in that they may occur in different locations but

types (marine)	wherever they occur they share broadly similar combinations of bathymetry, seabed geology and wave climate characteristics.
<i>Term</i>	<i>Definition</i>
Seascape guidelines	actions required to ensure that distinctive seascape character is maintained, enhanced or if appropriate, changed through the creation of new character. *
Seascape quality	the physical state of the seascape. It includes the extent to which typical character is represented in individual areas, sometimes referred to as strength of character, the intactness of the seascape from visual, functional and ecological perspectives and the condition or state of repair of individual elements of the seascape.*
Seascape sensitivity	The extent to which a seascape can accept change of a particular type and scale without unacceptable adverse effects on its character.
Seascape strategy	the objectives and overall vision of what the seascape should be like in the future, and what is thought to be desirable for a particular seascape character type or area, as a whole.*
Seascape, Landscape and Visual Impact Assessment (SLVIA)	is an established methodology which is used to assess the impact of the development or other use change on seascape, landscape and visual amenity. It includes analysis of the effects during the construction, operation and decommissioning phases of the development, including any restoration or after uses.
Seaward limits (of an SCA)	distance out to sea that the SCA will extend.
Slack	An area of almost motionless water.
Sublittoral zone	Near shore zone permanently covered with seawater.
Supralittoral zone	Area above the spring high tide line that is regularly splashed, but not submerged by sea water.
Suspension	The process by which lightweight materials are transported by moving water in the zone of turbulent flow.
Swash	The movement of a turbulent layer of water up the slope of the beach as a result of the breaking of a wave. It is capable of moving beach material of substantial size and is an important element in longshore drift.
Swell	A regular movement of marine waves created by wind stress in the open ocean.
Traction	Solid load carried by water.
Wave climate/stress	For the purposes of this study- a combination of wave height, direction and period over time relating to wind/wave exposure (fetch), tidal and current conditions, wave and tidal stresses, and bathymetry. This term can also be termed as wave exposure.

Other terms associated with landscape

<i>Term</i>	<i>Definition</i>
Amenity (Planting)	planting to provide environmental benefit such as decorative or screen planting.
Analysis	the process of dividing up the seascape/landscape into its component parts to gain a better understanding of it.
Ancient Woodland	land continuously wooded since AD 1600. It is an extremely valuable ecological resource, usually with a high diversity of flora and fauna.
Apparent	object visible in the seascape/landscape.
Approach	the step-by-step process by which seascape/landscape assessment is undertaken.
Arable	land used for growing crops other than grass or woody species.
Aspect	in Wales, an aspect is a component of the LANDMAP information recorded, organised and evaluated into a nationally consistent spatial data set. The landscape information is divided into five aspects- geological landscape, landscape habitats, visual and sensory, historic landscape and cultural landscape.
Aspect area	areas defined in each of the LANDMAP aspect assessments which are mutually exclusive
Assessment	term to describe all the various ways of looking at, analysing, evaluating and describing the seascape/landscape or assessing impacts on seascape/landscape and visual receptors.
Biodiversity	the variety of life including all the different habitats and species in the world.
Conservation	the protection and careful management of natural and built resources and the environment.
Carr	woodland in waterlogged terrain. Characteristic species include alder, willow and sallow.
Clawdd/cloddau	earth bank or mound relating to a hedge faced with stone in some areas
Complexity	(in the context of describing a skyline)how varied or complicated the skyline is from dead flat with even vegetation at one end of the scale to mountainous with varied vegetation at the other.
Coppicing	the traditional method of woodland management in which trees are cut down near to the ground to encourage the production of long, straight shoots that can be harvested.
Consistent	relatively unchanging element or pattern across a given area of seascape/landscape.
Cultural heritage asset	see heritage asset
Cultural pattern	expression of the historic pattern of enclosure and rural settlement.
Cumulative impacts/effects	either additional changes caused by a proposed development in conjunction with similar developments or the combined effect of a set of developments, taken

	together
<i>Term</i>	<i>Definition</i>
Distinctiveness	see sense of place
Diversity	(in terms of the function of an area) the variety of different functions of an area.
Dominant	main defining feature or pattern.
Ecosystem services	services provided by the natural environment, that benefit people. These include food, fibre and fuel provision and the cultural services that provide benefits to people through recreation and cultural appreciation of nature. Others include the regulation of the climate, purification of the air and water, flood protection, soil formation and nutrient recycling.
Effects	term used in environmental impact assessment (EIA) where effects are changes arising from the action, operation or implementation of a proposed development.
Effects, direct	where development lies within a seascape/landscape and physically removes an element or feature eg rocks, cliff, coastal vegetation
Effects, indirect	effects away from the development such as perceived change of character or from associated development such as transport infrastructure
Field Boundary	the defined edge of a field whether fence, hedge, bank, ditch or wall.
Field Size	large 2 Ha and above, medium around 1.5 Ha, small less than 1 Ha.
Geology	the study of the origin, structure, composition and history of the Earth together with the processes that have led to its present state.
Ground Type	expression of the soil forming environment and its influence in determining the surface pattern of vegetation and land use.
Hedge	fence of shrubs or low trees, living or dead, or of turf or stone. Though strictly a row of bushes forming a hedge, hedgerow has been taken to mean the same as a hedge.
Hedge bank	earth bank or mound relating to a hedge
Heritage asset	a designated or non-designated building, monument, site, place, area or landscape positively identified as having a degree of historical significance meriting consideration in planning decisions. Designated heritage assets include world heritage sites, scheduled ancient monuments, protected wreck sites, battlefields, listed buildings and registered parks and gardens.
Historic Environment Record (HER)	an historic environment record provides detailed information about the historic environment of a given area in accordance with Sections 35 and 36 of the Historic Environment (Wales) Act 2016. The four regional Welsh archaeological trusts maintain the up to date and publicly accessible historic environment records on behalf of Welsh Ministers. The HER replaces the Sites and Monument Record.
Historic Landscape Character (HLC)	character of landscape as determined by the range and distribution of surviving archaeological and historical features and the main types of historical land use patterns or historic 'themes' that have shaped an area. The key historic characteristics of an area are identified along with recommendations for their

	positive management.
<i>Term</i>	<i>Definition</i>
Historic Landscape Character Area (HLCA)	geographically definable and mappable area of historic character, as determined by the range and distribution of surviving archaeological and historical features and the main types of historical land use patterns or historic 'themes' that have shaped the area.
Horticulture	intensive form of cropping, such as vegetables or fruit.
Impact	used as part of overall term, as in EIA or LVIA, to help describe the process of assessing potentially significant effects- see effects.
Improved (in relation to soils or pasture)	addition of fertiliser and, in the case of pasture, reseeded with more productive grass species.
Inherent	dictionary definition- 'existing as an inseparable part'. In the context of sensitivity means the sensitivity of the seascape/landscape zone itself with all its component elements and features rather than its relationship with adjacent zones.
Integrity	unspoilt by large-scale, visually intrusive or other inharmonious development
Landcover	combinations of natural and man-made elements including vegetation that cover the land surface.
Landform	combinations of slope and elevation which combine to give shape and form to the land.
LANDMAP	<i>LANDMAP</i> is the national Geographical Information System (GIS) based information system for Wales, devised by the Countryside Council for Wales, for taking landscape into account in decision-making. It is a nationally consistent dataset divided into 5 aspects- geological landscapes, landscape habitats, visual and sensory, historical landscapes and cultural landscapes.
Landscape	an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors
Landscape and Visual Impact Assessment (LVIA)	is an established methodology which is used to assess the impact of the development or other use change on landscape and visual amenity. It includes analysis of the effects during the construction, operation and decommissioning phases of the development, including any restoration or after uses. (GLVIA 2002)
Landscape Character	a distinct, recognisable and consistent pattern of elements, features and qualities in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Area (LCA)	these are single unique areas which are discrete geographical areas of a particular landscape character. Each has its own individual character and identity. These areas in Wales are primarily derived from LANDMAP aspects.
Landscape of historic interest	An area listed and described in the non-statutory Register of Landscapes of Outstanding or Special Historic Interest in Wales, first published in January 1998 and prepared by Cadw in collaboration with CCW, ICOMOS UK, RCAHMW and others. These 58 landscapes are considered to be the best examples of different types of historic landscapes in Wales.

<i>Term</i>	<i>Definition</i>
Landscape resource	The overall stock of the landscape and its component parts. (The landscape considered as a measurable finite resource like any other eg minerals, land, water).
Landscape value	the relative value or importance attached to landscapes and LANDMAP aspects. These express national or local consensus e.g. designations or recognition, quality, special qualities including perceptual aspects such as scenic beauty, tranquillity or wildness, cultural associations or conservation issues. Value is also attributed to each LANDMAP aspect using a variety of criteria. An indication of how an area is valued may also be gained from observation of how it is used- eg a popular path to a hilltop viewpoint.
Magnitude of effect	degree of change
Mixed farmland	a combination of arable and pastoral farmland
Mosaic	mix of different landcovers at a fine grain such as woodland, pasture and heath.
Objective	method of assessment in which personal feelings and opinions do not influence characterisation or judgements.
Outcrop	the area where a particular rock appears at the surface.
Pastoral	land down to grass either grazed by animals or for cutting.
Physiography	expression of the shape and structure of the land surface as influenced both by the nature of the underlying geology and the effect of geomorphological processes.
Polygon	discrete digitised area in a geographic information system(GIS).
Prominent	noticeable feature or pattern in the landscape.
Protect	to keep from harm.
Qualities	aesthetic (objective visible patterns)or perceptual (subjective responses by the seascape/landscape assessor) attributes of the seascape/landscape such as those relating to scale or tranquillity respectively.
Quality	Based on judgements about the physical state of the seascape/landscape, and about its intactness, from visual, functional and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place.
Receptor, visual	people in a variety of different situations who can experience views within an area and who may be affected by change or development. Receptors can include users of public footpaths, open access land, roads, rail or cycleways or urban or rural residents.
Receptor, seascape/landscape	seascape/landscape character areas, designations, elements or features which may be affected by development
Remoteness	physical isolation, removal from the presence of people, infrastructure (roads and railways, ferry and shipping routes) and settlement
Resource	see seascape/landscape resource.

<i>Term</i>	<i>Definition</i>
Restore	repair or renew.
Riparian	vegetation associated with the water body, usually a river or stream.
Scenic quality	seascape/landscape with scenes of a picturesque quality with aesthetically pleasing elements in composition
Scheduled monument	monument/feature of historic interest and national importance with statutory protection, most with little prospect of economic use. Governed by the Ancient Monuments and Archaeological Areas Act 1979 as amended and updated by the Historic Environment (Wales) Act 2016.
Semi-natural vegetation	any type of vegetation that has been influenced by human activities, either directly or indirectly. The term is usually applied to areas which are reverting to nature due to lack of management.
Sense Of Place	the character of a place that makes it locally identifiable or distinctive ie different from other places. Some features or elements can evoke a strong sense of place eg islands, forts, vernacular architecture
Sensory	that which is received through the senses ie sight, hearing, smell, touch.
Setting, of a heritage asset	The surroundings in which the asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or a negative contribution to an asset, may affect the ability to appreciate that significance or may be neutral.
Settlement	all dwellings/habitations, whether single or clustered in cities, towns and villages.
Settlement Pattern	the predominant pattern of settlement in an area.
Significance	in environmental impact assessment- the importance of an effect. A significant effect needs to be taken into account in decision-making.
Subjective	method of assessment in which personal views and reaction are used in the characterisation process.
Topography	term used to describe the geological features of the Earth's surface eg mountains, hills, valleys, plains.
Unity	consistency of pattern over a wide area ie the repetition of similar elements, balance and proportion, scale and enclosure.
Value	see landscape value
Vernacular	built in the local style, from local materials.
Visual Effects	the likely visual effects undergone by people that would result from a development proposal or change in land management.
Visual sensitivity	visual sensitivity or 'visibility' is a measure of the degree to which change is likely to cause a visual impact within a particular seascape/landscape.

*Natural England, Scottish Natural Heritage and the Countryside Council for Wales (2014), An approach to landscape character assessment.

**AD Hooley (forthcoming?)

Abbreviations

AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
BCBC	Bridgend County Borough Council
CLVIA	Cumulative Landscape and Visual Impact Assessment
CCC	Carmarthenshire County Council
CCS	City and County of Swansea
CCW	Countryside Council for Wales
EIA	Environmental impact assessment
GLVIA	Guidelines for landscape and visual impact assessment
GIS	Geographic information system
HER	Historic Environment Record
HPMCZ	Highly protected marine conservation zone
HSC	Historic Seascape Characterisation
HW	High water
HWM	High water mark
ICZM	Integrated Coastal Zone Management
Km	kilometres
LBAP	Local Biodiversity Action Plan
LCA	Landscape character assessment <i>or</i> landscape character area
LDP	Local Development Plan
LVIA	Landscape and visual impact assessment
LW	low water
LWM	low water mark
m	metres
MPA	Marine Planning Area

MPS	Marine Policy Statement
nm	nautical miles
NPT	Neath Port Talbot County Borough Council
NRW	Natural Resources Wales
PCNP	Pembrokeshire Coast National Park
PCNPA	Pembrokeshire Coast National Park Authority
cSAC	Candidate Special Area of Conservation
SAC	Special Area of Conservation
SM	Scheduled Monument
SCA	Seascape character assessment /seascape character area
SCT	Seascape character type
SLA	Special Landscape Area
SINC	Site of Importance for Nature Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SLVIA	Seascape, landscape and visual impact assessment
SVIA	Seascape and visual impact assessment

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