Cyfoeth Naturiol Cymru
Natural Resources Wales

Severn Estuary / Môr Hafren Special Area of Conservation

Indicative site level feature condition assessments 2018

NRW Evidence Report No: 235

About Natural Resources Wales

Natural Resources Wales' purpose is to pursue sustainable management of natural resources. This means looking after air, land, water, wildlife, plants and soil to improve Wales' well-being, and provide a better future for everyone.

Evidence at Natural Resources Wales

Natural Resources Wales is an evidence based organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;
- Having a well resourced proactive programme of evidence work;
- Continuing to review and add to our evidence to ensure it is fit for the challenges facing us; and
- Communicating our evidence in an open and transparent way.

This Evidence Report series serves as a record of work carried out or commissioned by Natural Resources Wales. It also helps us to share and promote use of our evidence by others and develop future collaborations. However, the views and recommendations presented in this report are not necessarily those of NRW and should, therefore, not be attributed to NRW.

Report series:	NRW Evidence Report
Report number:	235
Publication date:	January 2018
Title:	Severn Estuary / Môr Hafren Special Area of Conservation: Indicative site level feature condition assessments 2018
Author(s):	NRW
Restrictions:	None

Distribution List (core)

NRW Library, Bangor	2
National Library of Wales	1
British Library	1
Welsh Government Library	1
Scottish Natural Heritage Library	1
Natural England Library (Electronic Only)	1

Recommended citation for this volume:

NRW, 2018. Severn Estuary / Môr Hafren Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report Series, Report No: 235, 41pp, NRW, Bangor.

Contents

Summary

This document presents NRW's indicative assessment of the condition of marine features in Severn Estuary / Môr Hafren Special Area of Conservation (SAC).

Table 1 contains a summary of the indicative condition assessments.

This report is divided into sections as follows:

Section 1: a brief introduction to the importance and need for site level feature condition assessments,

Section 2: a brief description of Severn Estuary SAC,

Section 3: NRW's indicative condition assessments for the features of Severn Estuary SAC, including a comparison with previous assessments for the site,

Section 4: NRW's plans for the future development of site level condition assessments,

Annexes explain in detail the process of producing indicative condition assessments.

Table 1: Summary of indicative condition assessments for Severn Estuary SAC.

Designated Features	Indicative condition assessment	Confidence in assessment
• Estuaries	Unfavourable	Medium
• Mudflats and sandflats not covered by seawater at low tide	Unfavourable	Medium
• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Unfavourable	Medium
• Sandbanks which are slightly covered by seawater all the time	Favourable	Low
• Reefs	Unknown	Not Applicable
• Sea lamprey (*Petromyzon marinus*)	Unfavourable	High
• River lamprey (*Lampetra fluviatilis*)	Unfavourable	High
• Twaite shad (*Alosa fallax*)	Unfavourable	High

More detailed explanations of the rationale behind these conclusions can be found in the full indicative condition assessment reports in section 3.

Crynodeb

Mae'r ddogfen hon yn cyflwyno asesiad dangosol CNC o gyflwr nodweddion Ardal Gadwraeth Arbennig Môr Hafren (AGA).

Mae Tabl 1 yn cynnwys crynodeb o'r asesiadau dangosol o gyflwr nodweddion.

Rhennir yr adroddiad hwn yn adrannau fel a ganlyn:

Adran 1: cyflwyniad byr i'r pwysigrwydd a'r angen am asesiadau cyflwr ar lefel safle

Adran 2: disgrifiad byr o AGA Môr Hafren,

Adran 3: Asesiadau cyflwr dangosol CNC ar gyfer nodweddion AGA Môr Hafren, gan gynnwys cymhariaeth gydag asesiadau blaenorol ar gyfer y safle,

Adran 4: Cynlluniau CNC ar gyfer datblygu asesiadau cyflwr ar lefel safle yn y dyfodol,

Mae **atodiadau'n** egluro'n fanwl y broses o gynhyrchu asesiadau dangosol o gyflwr nodweddion.

Tabl 1: Crynodeb o asesiadau dangosol o gyflwr nodweddion ar gyfer AGA Môr Hafren.

Nodweddion Dynodedig	Asesiad dangosol o gyflwr y nodwedd	Hyder yn yr asesiad
• Aberoedd	Anffafriol	Canolig
• Gwastadeddau llaid neu dywod nas gorchuddir gan y môr ar lanw isel	Anffafriol	Canolig
• Dolydd ar forfeydd arfordir y gorllewin (*Glauco-Puccinellietalia maritimae*)	Anffafriol	Canolig
• Ponciau tywod sydd fymryn dan ddŵr y môr drwy'r amser	Ffafriol	Isel
• Riffiau	Anhysbys	Ddim yn berthnasol
• Lamprai'r môr (*Petromyzon marin*us)	Anffafriol	Uchel
• Lamprai'r afon (*Lampetra fluviatilis)*	Anffafriol	Uchel
• Gwangen (*Alosa fallax)*	Anffafriol	Uchel

Mae esboniadau manylach o'r rhesymeg y tu ôl i'r casgliadau hyn i'w gweld yn yr adroddiad llawn ar asesu dangosol cyflwr nodweddion.

1. Site level feature condition assessments

Site level feature condition assessments are important for site management. In particular they:

- inform the development of management measures to improve the condition of features
- assist with the prioritisation of resources, and
- help with the assessments of plans and projects.

Marine special areas of conservation (SACs) in Wales cover extensive areas of sea and coast, much of which is challenging and resource intensive to monitor. As a result, assessment of condition can be difficult. It is therefore necessary to use a number of different sources of information and data to inform conclusions. These can vary from, for example, long-term monitoring/surveillance datasets, sampling programs and bathymetric data, to specific data-sets collected primarily for other purposes including Environmental Impact Assessments. For some features, there are very little or no data from which to draw conclusions.

NRW previously undertook preliminary work on full, detailed assessments using all available evidence and assessing all possible attributes. However, this process proved complex and resource intensive. We have therefore concluded that we will not be able to undertake this type of extensive assessment now or in the future, but instead we will develop a new serviceable and streamlined approach that can be embedded in our internal assessment and reporting tools and processes.

As the first stage in developing ongoing streamlined and sustainable site condition assessment and reporting, NRW has undertaken indicative assessments of condition of all marine SAC and Special Protection Area (SPA) sites and features in Wales. During an intensive workshop NRW specialists assessed each feature by using readily available data and information and applying their expert judgement. Further details on the approach taken can be found in Annexes A and B, summary definition in Box 1.

Box 1: Indicative condition assessments - definition and use

The term ‘indicative condition assessment’ describes the use of readily available evidence and expert judgement in an intensive, collective workshop process to provide an indication of feature condition at the site level.

The confidence rating associated with the assessments is an **integral** part of the indicative assessment. Confidence levels for feature assessments should therefore **always** be quoted alongside the indicative condition result, together with NRW’s definition of ‘indicative condition assessment’.

2. Site Description

The Severn Estuary is the largest example of a coastal plain estuary in the United Kingdom and one of the largest estuaries in Europe. Human activity has increasingly influenced the character of the marginal wetland mudflats and marshes, with extensive land claim occurring during and since the Roman period. Sediment flows and fluxes affecting the estuary are of particular importance for estuarine processes and ecology and the morphology of the estuary is constantly changing due to the complex hydrodynamics. Sediment deposits provide essential material to maintain the mudflats, sandflats and saltmarsh.

The Severn Estuary is important for its immense tidal range, which affects both the physical environment and the diversity and productivity of the biological communities. The tidal range is the second largest in the world, reaching in excess of 13m at Avonmouth. This macrotidal environment is partly due to the estuary's funnel shape which concentrates the tidal wave as it moves up the Bristol Channel.

The Severn Estuary SAC is a multiple interest site which has been selected for the presence of eight marine features. For the qualifying habitats and species, the SAC is considered to be one of the best areas in the UK for:

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Sea lamprey (*Petromyzon marinus)*
- River lamprey (*Lampetra fluviatilis)*
- Twaite shad (*Alosa fallax)*

and to support a significant presence of:

- Sandbanks which are slightly covered by sea water all the time
- Reefs

The features are distributed throughout the SAC with no single feature occupying the entire SAC and with features overlapping in some locations. The conservation advice (including conservation objectives), SAC boundary and the general location of the Annex I habitat features can be found in the conservation advice package and feature maps in the designated sites search on the NRW website[1]. The feature maps are indicative as the extent of most features is not known precisely and some, such as sandbanks, are dynamic and can be highly mobile.

[1] http://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/find-protected-areas-of-land-and-seas/designated-sites/?lang=en

3. Feature level indicative condition assessments

3.1 Estuaries indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary/ Môr Hafren SAC
Site feature assessed	Estuaries

Component of habitat feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*Monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Distribution & Extent (within site)	Unfavourable	Reports, WFD data and expert judgement	High	Medium	Medium
Structure & function	Unfavourable	WFD data and expert judgement	High	Low	Low
Typical species	Unfavourable	WFD data and expert judgement	High	Medium	Medium
Relevant activities (*activities directly impacting condition of the feature on this site*)	Coastal squeeze Water quality issues				

Overall Indicative Assessment	**Overall Confidence Level**
Unfavourable	Medium

Notes section: *The rationale for the assessment conclusion and confidence.*

The sub-features of the Severn Estuary feature are listed in the conservation objectives for the site (Reg 35). There are a number of sub-features, several of which are site features in their own rights.

Therefore, the assessments for these features should be read in conjunction with this assessment. The state of these sub-features is intrinsically linked to the condition of this feature as they are nested within the feature.

Severn Indicative Mudflats and sandflats feature assessment 2017: Unfavourable
Severn Indicative Atlantic Saltmarsh feature assessment 2017: Unfavourable
Severn Indicative Reefs feature assessment 2017: Unknown
Severn Indicative River Lamprey feature assessment 2017: Unfavourable
Severn Indicative Sea Lamprey feature assessment 2017: Unfavourable
Severn Indicative Shad feature assessment 2017: Unfavourable
Severn Indicative Sandbanks feature assessment 2017: Favourable

Severn SPA Indicative Assessment: In the recent indicative condition assessment of the Severn Estuary SPA (2017) four features were deemed unfavourable (Bewick swan, European White-fronted goose, Dunlin & Gadwall), while three were assessed as favourable (Redshank, Shelduck & the assemblage feature).

Other sub-features that do not have separate assessments but were considered for this assessment:
Zostera (sea grass) – good (WFD) for the only waterbody assessed (Severn Lower).
Fish: Good (WFD) for the two waterbodies assessed (Severn Upper & Lower).

Other elements have been covered below including nutrients, water quality and other biological elements.

Distribution & Extent: Based on information presented in the mudflats and sandflats assessment coastal squeeze is having a big impact on the extent of this feature as well as on the Atlantic salt meadows feature.
This component for estuaries is assessed as **Unfavourable**.

Structure & Function: WFD data was used for the available relevant waterbodies (Severn Lower, Bristol Channel Inner North & Bristol Channel Inner South), (waterbodies from the English part of the Severn were not available during the workshop), that overlap with the estuary feature. All three of these waterbodies have a moderate overall status while two have a good chemical status, with

one (Severn lower) having a fail for chemical status driven by mercury and its compounds and Brominated diphenylether (BDPE). Two of the three waterbodies assessed had a moderate for dissolved inorganic nitrogen (DIN) and one (Bristol Channel Inner North) had a moderate for Phytoplankton. This component was assessed as **Unfavourable**.

Typical species: Assessment based on information from nested feature assessments - mudflats and sandflats (favourable for typical species) and Atlantic salt meadows (unfavourable for typical species). Only one of the three waterbodies were assessed for seagrass – Severn Lower – and it was assessed as good but moderate for saltmarsh. Only one waterbody was assessed for infaunal quality index (IQI), it was assessed as good (Severn Lower). Although some WFD data were available, there was lack of information on the spatial location of the sample points and their relevance to the feature.

Collaborative work for NRW, EA and NE completed by Ecospan Environmental on the intertidal mudflats and sandflats feature had a very good spread of sample points across the intertidal sediments of the Severn estuary. The report generally stated 'unknown' for extent, distribution and community composition, but this may reflect the caution of the contractor. The data suggested that negative impacts are reducing and there are no clear changes that can be attributed to non-natural influences. Although the mudflats and sandflats typical species aspect of the assessment was favourable, the Atlantic Saltmarsh typical species assessments was unfavourable. Sea Lamprey, River Lamprey and Shad which are typical species of the estuary have been assessed as unfavourable. This component has been assessed as **Unfavourable**.

Evidence used: *The evidence used to support the assessment conclusion.*

- Ecospan Env. Ltd. (2012). *Severn Estuary SAC and SPA: Intertidal Mudflats and Sandflats Condition Assessment*. Report Number: ER13-198. (NRW/NE/EA Collaborative survey) - CCW Science report no 1048.
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/

3.2 Mudflats and sandflats not covered by seawater at low tide indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary / Môr Hafren SAC
Site feature assessed	Mudflats & sandflats not covered by seawater at low tide

Component of habitat feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Distribution & Extent (within site)	Unfavourable	Monitoring and reports	High	Medium	Medium
Structure & function	Unfavourable	Monitoring, expert judgement & WFD data	High	Medium	Medium
Typical species	Favourable	Report, expert judgement & WFD data	Medium	High	Medium
Relevant activities (*activities directly impacting condition of the feature on this site*)	Coastal defences (Hold the Line) leading to coastal squeeze Water quality issues				

Overall Indicative Assessment	**Overall Confidence level**
Unfavourable	Medium

Notes section: *The rationale for the assessment conclusion and confidence.*

Distribution & Extent: The extent of the intertidal areas within the Severn Estuary has been considered within a number of recent reports (HR Wallingford 2016a, HR Wallingford 2016b, NRW Internal Report (in prep)). None of these reports specifically examine the extent of the intertidal sand and mud feature, but they do offer an indication of change in extent/morphology based on analysis of LiDAR[2] data since 2005. HR Wallingford reports (2016a and 2016b) both examine Welsh data for the foreshore between Goldcliff and the Second Severn Crossing. For this area, the mudflat extent appears to be relatively stable for the period 2005 to 2015, although there are some localised variations.

NRW undertook a LiDAR survey of the coast from Goldcliff, west to Ogmore during late 2015, and this data has also been analysed in comparison to 2005 data (NRW Internal Report (in prep)). For the Severn Estuary intertidal sand and mud feature to the west of Goldcliff, especially the areas in front of Rhymney and Peterstone Great Wharfs, there has been a notable lowering of the mudflat between 2005 and 2015. The analysis is not able to provide an absolute change in extent due to limitations in the seaward extent of the LiDAR surveys, but would tend to indicate lateral erosion as well as vertical. In addition, the HR Wallingford (2016a) report indicates that whilst the last 10 years appear to have been relatively stable overall for the data and areas studied (which excludes the eroding area noted above), they also note a clear long term trend of erosion. The Severn Estuary Shoreline Management Plan (SMP) Habitats Regulations Assessments (HRA) also predicts 641 ha of Intertidal sand and mud habitat loss for the whole of the Severn Estuary SAC in the short term (2005-2025) due to coastal squeeze (and additional 38 ha loss of Atlantic saltmeadow) (Atkins, 2010). These predicted losses have partly been compensated for through the Steart Peninsula Habitat Creation project (which will create 3-400 ha of habitat - a mixture of mudflat and saltmarsh), although this project is entirely within and funded by England and is intended to compensate for coastal squeeze impacts arising from English flood defence schemes.
This component has been assessed as **unfavourable**.

Structure & Function: The Severn Estuary SAC overlaps with five waterbodies however only one (Severn Lower waterbody) overlaps with the mudflats and sandflats feature. Severn Lower has a moderate overall status and a fail for chemical status, the chemical status failure is driven by mercury and its compounds and Brominated diphenylether (BDPE). The ecological failure is driven by saltmarsh only. DIN (dissolved inorganic nitrogen), seagrass, phytoplankton and infaunal quality index (IQI) are all good or high. However due to the chemical failure and the failure for saltmarsh, this component has been assessed as **unfavourable**.

Typical species: Collaborative work for NRW, EA and NE completed by Ecospan Environmental (consultancy) had a very good spread of sample points across the intertidal sediments of the Severn estuary. The report generally stated 'unknown' for extent, distribution and community composition, but this may reflect the caution of the contractor. The data suggests that negative impacts

[2] LiDAR stands for light detection and ranging and is an airborne mapping technique which uses a laser to measure the distance between the aircraft and the ground up to 100,000 measurements/second are made allowing highly detailed terrain mapping.

are reducing and there are no clear changes that can be attributed to non-natural influences. The Severn Lower water body was assessed as good for IQI, good for seagrass and high for phytoplankton.
This component has been assessed as **favourable**.

Noted activities:

- Aggregate extraction at North Middle Grounds and Bedwyn Sands (which occur on in the intertidal zone) causes direct impacts within footprint, and potentially within buffer zone due to sediment plumes although limited impact due to high background turbidity. Morphological effects are closely monitored and recovery is expected post-dredging.
- Some waste dumping in the intertidal, not significant enough to cause changes to feature condition at this time.

There has been some reduction in point source discharges on the site.

Evidence used: *The evidence used to support the assessment conclusion.*

- Atkins (2010). *Severn Estuary Shoreline Management Plan Review- Appendix I: Section B, Habitats Regulations Assessment*
- Ecospan Env Ltd. (2012). *Severn Estuary SAC and SPA: Intertidal Mudflats and Sandflats Condition Assessment 2012*. CCW Science report no 1048. HR Wallingford (2016a). *Severn Estuary Long Term Morphology, Synthesis of data and modelling studies*, Report Number: DDR-5432-RT002-R03-00, The Crown Estate, 60 pages, ISBN: 978-1-906410-72-8
- HR Wallingford (2016b). *Area 470 (North Bristol Deep) Review of Monitoring 2016*, Report Number: DDM7722-RT001-R02-00. Report to Tarmac Marine Limited CONFIDENTIAL
- NRW (in prep). *Severn Estuary Foreshore Monitoring, LiDAR Analysis*. Internal Report
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/

3.3 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary / Môr Hafren SAC
Site feature assessed	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Component of habitat feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Distribution & Extent (within site)	Unfavourable	Reports & expert judgement.	High	Low	Low
Structure & function	Unfavourable	WFD waterbody assessments 2015 & expert judgement	High	Medium	Medium
Typical species	Unfavourable	Reports, WFD waterbody assessments 2015 & expert judgement	High	Medium	Medium
Relevant activities (*activities directly impacting condition of the feature on this site*)	Associated coastal squeeze effects (see notes below re extent).				

Overall Indicative Assessment	**Overall Confidence Level**
Unfavourable	Medium

Notes section: *The rationale for the assessment conclusion and confidence.*

Distribution & Extent: The extent of the intertidal areas within the Severn Estuary have been considered within a number of recent reports (HR Wallingford 2016a, HR Wallingford 2016b, NRW Internal Report (in prep)). None of these reports specifically examine the extent of the Atlantic Saltmeadow feature, but they do offer an indication of change in extent/morphology based on analysis of LiDAR[3] data since 2005. HR Wallingford (2016a) and HR Wallingford (2016b) both examine Welsh data for the foreshore between Goldcliff and the Second Severn Crossing. For this area, the saltmarsh extent appears to be relatively stable for the period 2005 to 2015, although there are some localised variations.

NRW undertook a LiDAR survey of the coast from Goldcliff, west to Ogmore during late 2015, and this data has also been analysed in comparison to 2005 data (NRW Internal Report (in prep)). For the Severn Estuary Atlantic Saltmeadow feature to the west of Goldcliff, especially the areas in front of Rhymney and Peterstone Great Wharfs, there has been a notable lowering of the mudflat, and retreat of the saltmarsh edge between 2005 and 2015. In addition, the HR Wallingford (2016a) report indicates that while the last 10 years appear to have been relatively stable overall for the data and areas studied (which excludes the eroding area noted above), they also note a clear long term trend of erosion of the intertidal zone. The Severn Estuary Shoreline Management Plan (SMP) Habitats Regulations Assessments (HRA) also predicts 38 ha of Intertidal sand and mud habitat loss for the whole of the Severn Estuary SAC in the short term (2005 - 2025) due to coastal squeeze (and additional 641 ha loss of Intertidal mudflat and sandflat). These predicted losses have been compensated for through the Steart Peninsula Habitat Creation project (which will create 3-400 ha of habitat in total - a mixture of mudflat and saltmarsh), although this project is entirely within and funded by England and is intended to compensate for coastal squeeze impacts arising from English flood defence schemes. The habitat creation scheme at Steart was breached in 2014, and as such the habitat remains at an early stage of development.

This component has been assessed as **unfavourable** if considering the Welsh section. Low confidence in the data used because it did not look at the whole of Welsh shore and not specifically looking at saltmarsh.

Structure & function: The Severn Estuary SAC overlaps with a number of WFD waterbodies, however only one Welsh waterbody overlaps with the Atlantic saltmeadows feature - Severn lower. This waterbody has a moderate overall status and a fail for chemical status, the chemical status fail is driven by mercury and its compounds and Brominated diphenylether (BDPE). The waterbody was assessed as good for Dissolved Inorganic Nitrogen (DIN) and high for phytoplankton. However, the WFD saltmarsh monitoring for this waterbody was only moderate. SAC/WFD monitoring in 2017 is aiming to bring together previously distinct monitoring approaches.
This component has been assessed as **unfavourable**.

[3] LiDAR stands for light detection and ranging and is an airborne mapping technique which uses a laser to measure the distance between the aircraft and the ground up to 100,000 measurements/second are made allowing highly detailed terrain mapping.

Typical species: The WFD saltmarsh monitoring for this waterbody was only moderate.
This component has been assessed as **unfavourable**.

Noted activities:

- Under-grazing,
- Some direct impact due to illegal vehicular access and damage,
- Possible temporary effects due to access for flood defence maintenance works,

Evidence used: *The evidence used to support the assessment conclusion.*

- Atkins (2010). *Severn Estuary Shoreline Management Plan Review* - Appendix I: Section B, Habitats Regulations Assessment
- Dargie, T. (1998). *NVC survey of saltmarsh habitat in the Severn Estuary 1998*. CCW Science Report 341.
- HR Wallingford (2016a). *Severn Estuary Long Term Morphology, Synthesis of data and modelling studies.* Report Number: DDR-5432-RT002-R03-00, The Crown Estate, 60 pages, ISBN: 978-1-906410-72-8
- HR Wallingford (2016b*). Area 470 (North Bristol Deep) Review of Monitoring 2016*. Report Number: DDM7722-RT001-R02-00. Report to Tarmac Marine Limited CONFIDENTIAL
- NRW (in prep). *Severn Estuary Foreshore Monitoring, LiDAR Analysis*. NRW Internal Report.
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/

3.4 Sandbanks which are slightly covered by sea water all the time indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary / Môr Hafren SAC
Site feature assessed	Sandbanks which are slightly covered by seawater all the time

Component of habitat feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Distribution & Extent (within site)	Favourable	Aggregate extraction monitoring reports for Middle & Welsh grounds & expert judgement	High	Low	Low
Structure & function	Favourable	Aggregate extraction monitoring reports for Middle & Welsh grounds & expert judgement	High	Low	Low
Typical species	Unknown	Very limited data available	High	Not applicable	Not applicable
Relevant activities (*activities directly impacting condition of the feature on this site*)	No activities identified as having a direct impact on site condition.				

Overall Indicative Assessment	**Overall Confidence level**
Favourable	Low

Notes section: *The rationale for the assessment conclusion and confidence.*

Distribution & Extent: The available data is limited to aggregate extraction monitoring reports (HR Wallingford, 2016) which includes annual bathymetric data for Middle and Welsh Grounds, but not for Cardiff Grounds or parts of the feature in English waters. There is regular but partial coverage of the feature but based on this there is no cause for concern in terms of extent and distribution. Therefore, this component has been assessed as favourable.

Structure & function: There are very limited particle size analysis data from the aggregates industry (HR Wallingford, 2016) which provide an indication that there have been no significant changes to substrate type. Likewise, the bathymetry data for Middle and Welsh Grounds indicates that there is no cause for concern in terms of bank morphology for that part of the feature.

The Severn SAC overlaps with several WFD waterbodies however the sandbank feature only overlaps with one Welsh WFD waterbody - Severn Lower. The sandbank feature also partially overlaps with one English waterbody but the data for this waterbody was not available at the time of assessment. Severn lower waterbody has a moderate overall status and a fail for chemical status, the chemical status fails for mercury and its compounds and Brominated diphenylether (BDPE). There was a lack of information, at the time of assessment, on the location of the point data and the relevance of the element failures to the assessment of condition of the sandbank feature in the absence of evidence of biological impact.

Severn Lower was assessed as good for seagrass, infaunal quality index (IQI) and DIN (dissolved inorganic nitrogen) and high for phytoplankton.

This component was assessed as **favourable** but with low confidence due to the mercury and BDPE failure.

Typical species: Benthic samples for subtidal sandbank communities in the Severn Estuary often return low numbers of biota and as a result aggregate extraction benthic monitoring has been focussed on particle size analysis as an indicator. Therefore, there is extremely limited data for a very small part of the subtidal sandbank feature for typical Species, hence the conclusion of **unknown**.

The Severn Lower waterbody was good for seagrass and infaunal quality index (IQI) and high for phytoplankton.

Overall, given the Favourable conclusions for extent and distribution, and structure and function, it was concluded that despite the lack of data on typical species, that the feature is likely to be **favourable** overall, but with low confidence.

Noted activities:
Aggregate extraction on part of the feature (North Bristol Deep, Area 470), and dredge disposal ongoing at Cardiff Grounds causes temporary impacts at any one time on parts of the feature. However, aggregate extraction licences have been through EIA/HRA processes and operate under a marine licence with conditions which ensure that adverse effects on the feature as a whole are avoided

Evidence used: *The evidence used to support the assessment conclusion.*

- HR Wallingford (2016). *Area 470 (North Bristol Deep) Review of Monitoring 2016*, Report Number: DDM7722-RT001-R02-00. Report to Tarmac Marine Limited CONFIDENTIAL
- Licence Area 377/379/381 Post-dredge Report. 2016. Prepared by Marine Space on behalf of Resource Management Association. CONFIDENTIAL.
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/
- Shoreline Surveys. (2014). *Survey Report: Welsh Grounds - Severn Estuary Sediment Sampling 2014*. Prepared for Severn Sands (Holdings) Ltd. Sampling Date: 18 September 2014. Ref.: J957S_Report. CONFIDENTIAL

3.5 Reefs indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary / Môr Hafren SAC
Site feature assessed	Reefs

Component of habitat feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*Monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Distribution & Extent (within site)	Unknown	Expert judgement, some monitoring data	High	Not applicable	Not applicable
Structure & function	Unknown	Expert judgement, WFD data	High	Not applicable	Not applicable
Typical species	Unknown	Expert judgement, WFD data	High	Not applicable	Not applicable
Relevant activities (*activities directly impacting condition of the feature on this site*)	No activities identified as having a direct impact on the feature condition				

Overall Indicative Assessment	**Overall Confidence Level**
Unknown	Not applicable

Notes section: *The rationale for the assessment conclusion and confidence.*

Distribution & extent: Original extent unknown at time of designation or at present time. Sonar camera trials have not yet reached the stage where extent of feature can be determined. Surveys are planned for this summer to determine whether this is a suitable methodology for determining extent of *Sabellaria* reef in the estuary.
Discussions with Ocean Ecology (consultancy working in the site) suggest that there is potentially more intertidal *Sabellaria* reef, in comparison to previous mapping (e.g. Phase 1 intertidal survey). Intertidal survey extent is known from the CCW Phase 1 survey intertidal (CCW, 2006, Brazier *et al*., 2007). Although there is intertidal data available this component has been assessed as **unknown**.

Structure & Function: The Severn is classified as a heavily modified waterbody. WFD data was used from the relevant waterbodies (Usk, Wye, Severn Lower & Bristol Channel inner North) three of these waterbodies have a moderate overall status and good chemical status while one (Severn lower) has a moderate overall status and a fail for chemical status, the chemical status fails for mercury and its compounds and Brominated diphenylether (BDPE).. Two of the three of the waterbodies where it has been assessed had a moderate for Dissolved Inorganic Nitrogen (DIN). The distribution of these data points in relation to the reef and the impact of the different elements measured on the structure and function of the reef are unknown. Therefore, although the water quality element of structure and function would be unfavourable the lack of other monitoring data for reefs in the Severn means that this component has been assessed as **unknown** based on expert judgement.

Typical species: WFD sediment sampling has increased the number of records that we have for *Sabellaria* subtidally within the Severn. However, distribution of point records remains sporadic, particularly on the Welsh side of the estuary. Any assessment of the quality of the reef from grab samples remains problematic. Therefore, this component has been assessed as **unknown**.

Evidence used: *The evidence used to support the assessment conclusion.*

- Brazier, P., Birch, K., Brunstrom, A., Bunker, A., Jones, M., Lough, N., Salmon, L. & Wyn, G., (2007). *When the tide goes out. The biodiversity and conservation of the shores of Wales – results from a 10-year intertidal survey of Wales*. Countryside Council for Wales, Bangor.
- Countryside Council for Wales (2006). *CCW Phase 1 intertidal survey dataset (unpublished)*.
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/

3.6 Sea lamprey (*Petromyzon marinus*) indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary / Môr Hafren SAC
Site feature assessed	Sea lamprey (*Petromyzon marinus*)

Component of species feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*Monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Freshwater population variables	Unfavourable	Monitoring Reports (Garrett *et al*. 2012; Thomas *et al*., 2012)	High	High	High
Marine habitat	Unfavourable	WFD 2015 assessment & expert judgement	High	High	High
Relevant activities (*activities directly impacting condition of the feature on this site*)	Water quality issues				

Overall Indicative Assessment	**Overall Confidence level**
Unfavourable	High

Notes section: *The rationale for the assessment conclusion and confidence.*

Freshwater population variables: The supporting datasets are based on a specific NRW monitoring programme following relevant Joint Nature Conservation Committee (JNCC) common standards monitoring (CSM) guidance (2005; 2015).
As with all migratory fish, the assessment is based on data from the inflowing river (Rivers Usk and Wye), as relevant marine data have not been collected. Although sea lamprey ammocoetes are distinct from *Lampetra* ammocoetes, they are typically much less frequent in samples and so can be difficult to detect. Therefore, sea lamprey ammocoete data are always poor. Specific variables assessed: Wye & Usk ammocoetes: Fail, Wye & Usk adult run: Not assessed. This component has been assessed as **unfavourable**.

Marine habitat: Sea lamprey feed pelagically on larger fish in estuaries as juveniles and subsequently at sea, where they can be very wide-ranging. WFD data was used from the relevant waterbodies (Usk, Wye, Severn Upper, Severn Lower & Bristol Channel inner North) four of these waterbodies have a moderate overall status and good chemical status while one (Severn lower) has a moderate overall status and a fail for chemical status, the chemical status fails for mercury and its compounds and Brominated diphenylether (BDPE). Three of the four waterbodies where it has been assessed had a moderate for dissolved inorganic nitrogen (DIN). This component has been assessed as **unfavourable**.

Evidence used: *The evidence used to support the assessment conclusion.*

- Davies R. (2016). *Sea Lamprey Monitoring on the River Tywi 2011-2014.* NRW Report NFAT/16/02.
- Garrett H, Thomas Rh, Hatton-Ellis TW. (2012). *River Wye Population Attribute Condition Assessment for Brook, River and Sea Lamprey, 2012. 13/8/2*. Bangor, Countryside Council for Wales.
- Thomas Rh, Garrett H, Hatton-Ellis TW. (2012). *River Usk Population Attribute Condition Assessment for Brook, River and Sea Lamprey, 2012. 11/8/6.* Bangor, Countryside Council for Wales.
- JNCC, (2005). *Common Standards Monitoring Guidance for Freshwater Fauna, Version - August 2015*, ISSN 1743-8160 (Online)
- JNCC, (2015). *Common Standards Monitoring Guidance for Freshwater Fauna, Version - October 2015*, ISSN 1743-8160 (Online)
- Thomas, Rh., Garrett, H. & Hatton-Ellis, T.W. (2012*). River Usk Population Attribute Condition Assessment for Brook, River and Sea Lamprey 2011*. CCW Staff Science Report No. 11/8/6.
- Thomas, Rh., Garrett, H. (2013a). *2nd reporting Cycle Condition assessments (2007-2012): River Usk SAC*.
- Thomas, Rh., Garrett, H. (2013b). *2nd reporting Cycle Condition assessments (2007-2012): River Wye SAC*.
- Thomas, Rh., Hatton-Ellis, T.W., Garrett, H. (2013). *Water Quality Assessments for River Special Areas of Conservation*: *Second Habitats Directive Reporting Round (2007-2012)*. 12/8/2. Bangor, Countryside Council for Wales. CCW Staff Science Reports.
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/

3.7 River lamprey (*Lampetra fluviatilis*) indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary/ Môr Hafren SAC
Site feature assessed	River Lamprey (*Lampetra fluviatilis*)

Component of species feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*Monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Freshwater population variables	Favourable	Monitoring Reports (Thomas *et al*., 2012; Garrett *et al*., 2013).	High	High	High
Marine habitat	Unfavourable	WFD 2015 assessment & expert judgement.	High	High	High
Relevant activities (*activities directly impacting condition of the feature on this site*)	Water quality issues				

Overall Indicative Assessment	**Overall Confidence level**
Unfavourable	High

Notes section: *The rationale for the assessment conclusion and confidence.*

Freshwater population variables: The supporting datasets are based on a specific NRW monitoring programme following relevant Joint Nature Conservation Committee (JNCC) common standards monitoring (CSM) guidance (2005; 2015). Lamprey species (*Lampetra* spp.) cannot be reliably identified to species at the larval stage, so there is inherent uncertainty in the population assessment. As with all migratory fish, the assessment is based on data from the inflowing river (Rivers Usk and Wye), as relevant marine data have not been collected.

Specific variable assessed in the relevant inflowing rivers were:
Usk: Age Structure: Pass, Distribution: Pass, Ammocoete Density: Fail, low confidence.
Wye: Age Structure: Pass, Distribution: Pass, Ammocoete Density: Pass
All passes have a high confidence, density failure on Usk due to sampling method and sample size issues so the overall population assessment is **favourable**.

Marine habitat: The Severn is classified as a heavily modified waterbody. WFD data was used from the relevant waterbodies (Usk, Wye, Severn Upper, Severn Lower & Bristol Channel inner North) four of these waterbodies have a moderate overall status and good chemical status while one (Severn lower) has a moderate overall status and a fail for chemical status, the chemical status fails for mercury and its compounds and Brominated diphenylether (BDPE). Three of the four waterbodies where it has been assessed had a moderate for dissolved inorganic nitrogen (DIN). This component has been assessed as **unfavourable**.

Evidence used: *The evidence used to support the assessment conclusion.*

- Garrett, H., Thomas, Rh., Hatton-Ellis, T.W. (2012). *River Wye Population Attribute Condition Assessment for Brook, River and Sea Lamprey, 2012*. 13/8/2. Bangor, Countryside Council for Wales.
- JNCC, (2005). *Common Standards Monitoring Guidance for Freshwater Fauna, Version - August 2015*, ISSN 1743-8160 (Online)
- JNCC, (2015). *Common Standards Monitoring Guidance for Freshwater Fauna, Version - October 2015*, ISSN 1743-8160 (Online)
- Thomas, Rh., Garrett, H. & Hatton-Ellis, T.W. (2012). *River Usk Population Attribute Condition Assessment for Brook, River and Sea Lamprey 2011*. CCW Staff Science Report No. 11/8/6.
- Thomas, Rh., Garrett, H. (2013a). *2nd reporting Cycle Condition assessments (2007-2012): River Usk SAC*.
- Thomas, Rh., Garrett, H. (2013b). *2nd reporting Cycle Condition assessments (2007-2012): River Wye SAC*.
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/

3.8 Twaite shad (*Alosa fallax*) indicative condition assessment

The indicative condition of the feature at this site at the time of assessment

Date	May 2017
Site name	Severn Estuary / Môr Hafren SAC
Site feature assessed	Twaite shad (*Alosa fallax*)

Component of species feature assessed	**Indicative Assessment** (*Favourable, unfavourable, unknown*)	**Key evidence type used** (*monitoring data, reports or expert judgement*)	**Level of agreement**	**Confidence in evidence**	**Component confidence level**
Freshwater population variables	Unfavourable	Monitoring report (Garrett, in prep)	High	High	High
Marine habitat	Unfavourable	WFD 2015 assessment & expert judgement	Low	High	Low
Relevant activities (*activities directly impacting condition of the feature on this site*)	• Water quality issues • Barriers to migration				

Overall Indicative Assessment	**Overall Confidence level**
Unfavourable	High

Notes section: *The rationale for the assessment conclusion and confidence.*

Twaite shad are migratory fish that spawn in rivers but spend much of their lives at sea after a freshwater phase of about 3 months. The Welsh side of the Bristol Channel contains almost all the known UK populations of twaite shad. These fish are very difficult to monitor at sea and so this assessment combines data from their spawning areas in the Wye and Usk SACs and the Severn where available. The supporting datasets are based on a specific NRW monitoring programme following relevant Joint Nature Conservation Committee (JNCC) common standards monitoring (CSM) guidance (2005; 2015).

Twaite shad are closely related to allis shad (*Alosa alosa*), with which they hybridise. Allis shad are much rarer and although their presence is suspected in the Wye and Usk, there are no recent confirmed records. Genetic studies show that populations in the Wye, Usk, Tywi and Severn all show evidence of significant levels of past or current hybridisation (Hardouin *et al*., 2013).

Freshwater population variables:
River Wye: Population assessment data are spatial and indicate that spawning occurs widely throughout the lower and middle Wye. There are no significant artificial barriers to migration. Most recruitment probably comes from spawning below Builth Wells, including the Wye in Herefordshire, but spawning has been confirmed as far upstream as Newbridge-on-Wye.
River Usk: The extent of the River Usk shad population in the upper reaches is limited by the bridge footings at Crickhowell bridge and Llanfoist bridge is a partial barrier during low flows. The extent of spawning has declined when compared with assessments from the previous reporting cycle and so the population continues to fail to meet this attribute. However, the extent of this failure is comparatively small.
River Severn: Detailed data are not available from the Severn, but the population is much less than its historic population due to the presence of a series of navigation weirs that restrict access to about 10% of the formerly accessible river length. A restoration project ('Shad Severn') is seeking to restore access to much of this habitat and Natural England are also seeking to restore or improve access in the Teme, a major tributary of the Severn.
This component has been assessed as **unfavourable,** but this situation could be significantly altered by the restoration project on the Severn.

Trend – declining (low confidence): The trend assessment is based on long-term data from the Hinkley Point power station, which seems to suggest a decline since the 1980s. However, this is based on a single sampling location which may not be representative of the overall site. Additionally, there is high variability in the data and trends in the Hinkley data do not seem to correspond with freshwater or inner estuary data (Aprahamian & Aprahamian 2001). Therefore, the Hinkley data has been assigned low confidence. Unfortunately, the Inner Estuary dataset ceased in the mid-2000s.

Marine habitat:. WFD data was used from the relevant waterbodies (Usk, Wye, Severn Upper, Severn Lower & Bristol Channel inner North) four of these waterbodies have a moderate overall status and good chemical status while one (Severn lower) has a moderate overall status and a fail for chemical status, the chemical status fails for mercury and its compounds and Brominated diphenylether (BDPE). Three of the four waterbodies where it has been assessed had a moderate for Dissolved Inorganic Nitrogen (DIN).
This component has been assessed as **unfavourable**.

Evidence used: *The evidence used to support the assessment conclusion.*

- Aprahamian, M.W., Aprahamian, C.D. (2001*) The influence of water temperature and flow on year class strength of Twaite Shad (Alosa fallax fallax) from the River Severn, England*. Bulletin Francais de la Peche et de la Pisciculture, 362/363, 953-972.
- Garrett, H. (in prep). *River Wye SAC Monitoring: Allis & Twaite Shad Population Condition Assessment*. Reporting Cycle 2013-2018. NRW, Dolgellau.
- Hardouin, E.A., Stuart, S., Andreou, D. (2013). *Monitoring Allis and Twaite Shad: quality assurance and species identification using molecular techniques*. NRW Evidence Report No: 1, 41pp, Natural Resources Wales, Bangor.
- JNCC, (2005). *Common Standards Monitoring Guidance for Freshwater Fauna, Version - August 2015*, ISSN 1743-8160 (Online)
- JNCC, (2015). *Common Standards Monitoring Guidance for Freshwater Fauna, Version - October 2015*, ISSN 1743-8160 (Online)
- Sheppard, O. (2012). *River Wye SAC - Assessment of recent actual flow against the HD ERF 2012*. Unpublished report.
- Sheppard, O. (2013). *River Usk SAC - Assessment of recent actual flows against the Usk Combined RFO 2012*.
- Thomas, Rh., Garrett, H. (2013a). *2nd reporting Cycle Condition assessments (2007-2012): River Usk SAC.*
- Thomas, Rh., Garrett, H. (2013b). *2nd reporting Cycle Condition assessments (2007-2012): River Wye SAC.*
- Thomas, Rh., Hatton-Ellis, T.W., Garrett, H. (2013). *Water Quality Assessments for River Special Areas of Conservation: Second Habitats Directive Reporting Round (2007-2012)*. 12/8/2. 2013. Bangor, Countryside Council for Wales. CCW Staff Science Reports.
- WFD waterbody classifications (2015). 2009-2015 Classification Data: http://waterwatchwales.naturalresourceswales.gov.uk/en/

3.9 Comparison with previous assessments

The indicative condition assessments for all SACs were compared to previous assessments for these features at the site level carried out between 2005 – 2007. The earlier assessments were carried out in more detail and different data and evidence sources were sometimes used; as a result, current and previous assessments are not directly comparable, although they do both give an indication of the condition of the feature at the time of assessment. However, in the last assessment round (2005-07) the features of the Severn Estuary SAC were not assessed.

Feature	2005 - 07 assessments	2017 indicative assessments
• Estuaries	Not Assessed	Unfavourable
• Mudflats and sandflats not covered by seawater at low tide	Not Assessed	Unfavourable
• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Not Assessed	Unfavourable
• Sandbanks which are slightly covered by seawater all the time	Not Assessed	Favourable
• Reefs	Not Assessed	Unknown
• Sea lamprey (*Petromyzon marinus*)	Not Assessed	Unfavourable
• River lamprey (*Lampetra fluviatilis*)	Not Assessed	Unfavourable
• Twaite shad (*Alosa fallax*)	Not Assessed	Unfavourable

4. Future development of site level assessments

Following this full round of indicative site condition assessments, we are now developing a permanent, sustainable, site level feature condition reporting process that can be delivered on a regular basis. We are planning a series of projects to work towards this goal. It is unlikely that resources and suitable evidence sources will all be available at any given time to monitor and report on all features, or to report to the same level of confidence. Our aim, however, is to develop, over the coming few years, an assessment and reporting process that is of practical use in informing effective site management for the maintenance or improvement of feature and site condition.

Annex A: Process used to produce indicative condition assessments

The process to produce indicative feature condition assessments at the site level centred around a workshop approach that applied readily available evidence and expert judgement to provide an *indication* of features condition. Figure A1 summarises the process of producing indicative condition assessments, and Figure A2 provides a summary definition of NRW's meaning of indicative site level feature condition assessments and advice on how they should be used.

Figure A1: Summary of the procedure undertaken

Stages undertaken to produce indicative site level condition assessment reports for Welsh European marine sites (EMS)

1. Indicative condition assessment workshop
2. Standardisation of indicative feature assessments across different sites
3. Standardised feature assessments sent out internally for comment
4. Issues with individual assessments resolved
5. Features assessments re-issued to internal staff for final comments.
6. Final draft indicative feature-level condition assessments produced
7. Internal sign-off * - draft indicative feature-level condition assessments
8. External quality assurance of draft indicative feature-level condition assessments
9. Changes made to assessments arising from quality assurance stage
10. Production of site-level reports containing indicative assessments and guidance for interpretation and use of indicative assessments
11. Final Internal sign-off ** - final site-level reports

* 1st internal sign-off by a dedicated task & finish group for the work
** Final internal sign-off by the task & finish group and then the Marine Programme Board

Figure A2: Summary definition of indicative site condition assessment.

Indicative condition assessments: Definition and use

The term 'indicative condition assessment' describes the use of readily available evidence and expert judgement in an intensive, collective workshop process to provide an indication of feature condition at the site level.

The confidence rating associated with the assessments is an **integral** part of the indicative assessment. Confidence levels for feature assessments should therefore **always** be quoted alongside the indicative condition result, together with NRW's definition of 'indicative condition assessment'.

A.1 Indicative condition assessment workshop

Existing readily available data and information was collated and an organisation-wide workshop held with NRW's specialists. By using the evidence available at the workshop and applying expert judgement, staff examined each feature for each site and drew indicative conclusions on condition. A total of 69 assessments were carried out; 66 within the workshop and a further three, for otter, following the workshop, to accommodate staff availability.

A.1.1 Assessment templates

Assessment templates were produced in advance of the workshop. These templates differed slightly depending on the feature type. In all cases the assessments were broken down into different components that were assessed separately. To assist with the workshop assessment process, staff populated the templates with relevant information before the workshop.

The templates included a notes section for providing more information on the component assessments, and an evidence section for listing the information used to inform the assessments – this was not, however, a full reference list.

A.1.2 Confidence levels

Guidance on the confidence levels to use for the assessments was produced before the workshop (Annex B).

A.1.3 Guidelines agreed at the workshop

At the beginning of the workshop the assessment approach was discussed and the following guidelines were agreed:

- 'Baseline' is considered to be the state at the time of designation – unless there is a recovery target in the conservation objectives. This means that significant modifications at the site before designation should not be taken into consideration unless there was a recovery target in the conservation objective for that feature at that site.
- The indicative condition is based on current knowledge and is based on the present i.e. the date of the assessment - but significant future concerns should be noted.
- If one attribute of the condition assessment is unfavourable, then the whole assessment is judged to be unfavourable ('one out, all out') unless there is a good reason to diverge from this. This is standard practice for NRW's Water Framework Directive (WFD) assessment processes as well as for terrestrial sites.
- Small-scale local known impacts should not necessarily result in a conclusion of unfavourable condition, but impacts should be noted.
- Assessments where there are 'unknowns' do not necessarily lead to a conclusion of unfavourable condition.
- There can be an overall 'unknown' conclusion where there is no information available to make the assessment.
- Nested features should be related to each other in the assessments. For example, an estuary feature in a site might encompass other named features. For example, in Pembrokeshire Marine SAC, the estuary feature also encompasses the mudflats and sandflats feature and the Atlantic saltmeadows feature.

- Where there is limited data an assessment should be made but the lack of data should be reflected in the confidence score.
- Any activities, developments or management measures that are having either positive or negative impacts should be noted in the assessments.
- Context on the indicative assessments and confidence ratings should always accompany the release of the conclusions on site level feature condition.

A.1.4 Post workshop processing of indicative assessments.

All 69 assessments were then taken through a process of developing them from the draft assessments agreed at the workshop to finalised indicative assessments contained within site level reports (Figure A1).

A.2 Use of best, readily available evidence

During the collation exercise and the workshop the best readily available evidence was used. Confidence ratings were applied to the evidence used for each component of the assessment (the guidance on these confidence levels can be found in Annex B). Three main sources of evidence were available before and during the workshop:

- Site-level monitoring data
- WFD Waterbody Assessments
- Activities information

In addition, expert judgement was a key part of the assessment process, drawing on the knowledge, expertise and experience that staff have amassed over many years collectively, from: training and research; visiting the sites; monitoring and survey work; and the provision of advice on development planning and activities regulation at the site level.

A.2.1 Site level monitoring data and reports

Monitoring is carried out on features or sub-features of our European marine sites following the UK common standards monitoring guidance. The amount of monitoring NRW carries out is, however, limited to the resources available, and hence the resultant prioritised monitoring programme does not provide monitoring data for all features.

Limitations:
Although the relevant specialists were present, the intensive workshop format did not always allow for full, detailed scrutiny of individual SAC monitoring reports for some features. Some monitoring information was therefore checked or added to after the workshop. A lack of resources to produce analysed reports on all existing monitoring data was highlighted as an issue during the workshop.

A.2.2 Water Framework Directive (WFD) Waterbody Assessments

The latest relevant WFD waterbody assessments (2015[4]) were used during the workshop. Both Transitional and Coastal Water bodies overlap with the SAC boundaries but, in most cases, the boundaries do not match with SAC boundaries. Maps showing the water bodies can be found at the Water Watch Wales web site[5].

[4] Environment Agency. 2015. Classification of Surface Water Bodies for the Water Framework Directive – Method Statement. Version 3.0 updated August 2014.
[5] http://waterwatchwales.naturalresourceswales.gov.uk/en/

Limitations:
Although good use was made of the summary data for the waterbody assessments, and tables had been created linking the relevant waterbodies to the relevant European marine sites, complete datasets were not available for the workshop. In addition, although some mapping data was available, the data points for each monitoring element and how they related to the feature being assessed were not available for all assessments. This was due to time constraints and the number of assessments being carried out. WFD specialists were, however, available to provide expert advice during and after the workshop.

There was some discussion among assessors on the use of some WFD elements and their relevance to individual features. The mercury and brominated diphenylether (BDPE) standard used in the 2015 WFD assessments are new more stringent standards which did not need to be implemented until 2018 but nonetheless were used in the knowledge that new standards will be coming in and to be consistent between England and Wales. These new standards have not been used in the Marine Strategy Framework Directive (MSFD) habitat assessments, which instead used the OSPAR[6] (Oslo and Paris conventions) standards for these elements.

Since the WFD assessments had been used extensively in the NRW indicative condition assessments, the decision was made, for reasons of consistency, to use the new WFD standard. It should be noted that if NRW had used the OSPAR standard some of the component elements of the indicative condition assessments would have been favourable. As part of the next stage of further developing NRW's approach to MPA site level feature condition assessment, further work is planned to assess which standards are the most relevant to apply to the Welsh MPA network.

A.2.3 Activities information

The NRW LIFE Natura 2000 (N2K) Programme[7] focussed on producing Prioritised Improvement Plans (PIPs) for each European site in Wales. These provided information on the pressure and threats for each feature of each site for assessors at the workshop. Staff were also available to discuss any ongoing casework[8] at the site level that may have impacted site condition.

Limitations:
The summary data provided was useful but, due to the number of features, information on the pressures and threats was only provided in a summary form so that detailed site level information for each issue against each feature could not be explored.

However, staff with expert local knowledge were also available to discuss pressures and threats at the site, and hence available activity information and knowledge was sufficient to support the indicative assessment process.

Two types of activity information were reported by assessors in the indicative condition assessments:

[6] Oslo and Paris conventions managed by the OSPAR Commission: https://www.ospar.org/
[7] https://naturalresources.wales/about-us/our-projects/life-n2k-wales/?lang=en
[8] Casework is a term used to encompass the assessments of plans and projects on protected sites

Relevant activities: These were activities agreed during the indicative assessment process as having an impact on the condition of the feature, underpinned by evidence. There was no confidence rating associated with these activities or their associated impacts.

Noted activities: These were activities agreed during the indicative assessment process as occurring in the site, but where there is no evidence that the activity is having a direct impact on condition of the feature at that site. Noted activities may be having, or have the potential to have, an impact on feature condition, and were listed to be kept under review.

Not all activities for a site from the LIFE N2K Programme were listed in the assessments as relevant or noted activities by the assessors. The activities listed are not meant to replace the pressures and threats in the Prioritised Improvement Plans.

Annex B: Confidence level guidance used in the site level indicative condition assessments.

B.1 Assigning confidence to component parts of the feature assessments

An indicative assessment was made for each component part of the assessment (e.g. structure and function, or typical species). These components varied depending on which feature was being assessed.

There were three potential outcomes for the assessment for each component of condition:

- favourable,
- unfavourable or
- unknown

Each outcome was assigned a confidence level.

Use of 'Unknown': The *unknown* category was only used for the condition assessment where the evidence base was extremely low or absent, and as a result it was not possible to reach any conclusion on condition. In this case the confidence level for the evidence part of that assessment was recorded as not applicable (N/A).

Even where a value was given for 'level of agreement', if the overall assessment of the component was unknown, the overall component confidence level was also recorded as not applicable (N/A).

Use of 'Unfavourable': Where any one component was unfavourable, the overall conclusion was unfavourable, (the 'one out, all out' rule), unless there was a good reason to deviate from this. See, for example, the otter assessments.

There were two types of confidence considered during the indicative condition assessment process.

1. The level of consensus between assessors and
2. The confidence in the evidence that the assessment was based on.

A matrix approach was used for this first stage of assigning confidence levels for each component of the indicative assessment.

Figure B1: Matrix used to assign the confidence level for each component of the indicative condition assessment.

Level of agreement ↑				
	High	***Low***	***Medium***	***High***
	Medium	***Low***	***Medium***	***Medium***
	Low	***Low***	***Low***	***Low***
		Low	Medium	High
		Confidence in evidence →		

B.1.1 Level of agreement between assessors

Assessors were required to draw conclusions based on the available evidence in the context of their knowledge of the relevant feature at that site. Where available evidence was contradictory or of only partial benefit in arriving at a condition assessment, this was resolved as far as possible, taking into account the amount, quality and relevance of the data. The resultant conclusion was given a confidence rating for the degree of consensus amongst the assessors, as follows:

- **High:** All assessors agreed with the assessment of the feature condition component;
- **Medium:** The majority of the assessors agreed with the assessment of the feature condition component;
- **Low:** There was no clear consensus on the assessment of the feature condition component.

B.1.2 Level of confidence in the evidence used to make the assessment

The degree of confidence in the assessments of each component was based on the quantity, quality, relevance or consistency of the evidence used. The categories are high, medium and low confidence as described below:

High confidence

- Clear evidence from complete monitoring surveys (high quality data collected to relevant standards with robust analysis of results and appropriate positional data) to support assessment relevant to condition components.

Medium confidence

- Partial survey or one of lower quality (i.e. lacking detail or appropriate positional data);
- Indirectly relevant to condition components but evidence may be from a complete survey, scientifically accurate study, peer-reviewed research or other surveys;
- Site-based, expert knowledge directly relevant to targets, supported by evidence (i.e. records, casework history, photos, positional data).

Low confidence

- Incomplete, old or lower quality survey;
- High quality data but from only a small portion of the component (e.g. data only available for one small area of a habitat on a site where that habitat is extensive and varied);
- Modelled information;
- Site-based, expert knowledge information either indirectly relevant to component condition or lacking sufficient supporting information.

B.2 Assigning confidence levels to the overall indicative condition assessment

The process for assigning the overall confidence level for the indicative assessment of the feature from the component confidence levels used the following rules:

- Where the overall indicative condition assessment was Unknown the confidence level was stated as not applicable.
- Where only one of the assessment components was unfavourable (leading to the overall assessment of unfavourable), the confidence level associated with the unfavourable component was used.
- Where two or more of the assessment components were unfavourable (leading to the overall assessment of unfavourable), the highest confidence level assigned to one of the unfavourable components was used for the overall confidence level.
- In all other circumstances the highest confidence level[9] attained for one of the individual components was used.

B.3 Use of confidence ratings

In all instances, whenever the indicative features and site condition assessments are reproduced or quoted this should be done together with the confidence rating and the definition of indicative assessment provided in this report.

[9] The use of the highest confidence level is one used in WFD assessments – reflecting that the assessment confidence is based on the best evidence available.

Published by:
Natural Resources Wales
Cambria House
29 Newport Road
Cardiff
CF24 0TP

0300 065 3000 (Mon-Fri, 8am - 6pm)

enquiries@naturalresourceswales.gov.uk
www.naturalresourceswales.gov.uk