



**Cyfoeth  
Naturiol  
Cymru  
Natural  
Resources  
Wales**

# Identifying areas of Welsh seabed potentially vulnerable to anchoring, mooring and launching



NRW Evidence Report 556

July 2021

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- 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
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## Executive summary

This work was carried out to inform the Wales non-licensable activities project, which focusses on improving management of non-licensable activities impacting condition of marine features across the N2K network. Anchoring, mooring and launching were identified as priority activities as they have the potential to damage sensitive habitats through abrasion and disturbance of the seabed. In 2018/19, NRW ran a contract to gather spatial data of these activities in Wales. This report uses the activity data obtained in 2018/19 and overlaps it with habitats deemed 'sensitive' to pressures caused by these activities. The aim of the work is to highlight potentially vulnerable areas where conflict may be expected, or is already occurring, to focus future work on site condition.

A series of steps were undertaken to identify potentially vulnerable areas. Firstly, the list of habitats deemed sensitive to the pressures of anchoring, mooring and launching were developed. Initial scoping of whether features could be impacted by these activities was undertaken and GIS analysis was then undertaken using the Geoprocessing 'Intersect' tool to ascertain where sensitive habitats overlapped with activities. Outputs were then sense checked with local staff and aerial photography.

The report identifies a number of sites in north Wales where seagrass is present in areas of anchoring and mooring which it would be beneficial to follow up by further work. The report also discusses current successful management of seagrass and maerl in Milford Haven and Skomer which could be promoted. The importance of current habitat data is also raised.

Mudflats and sandflats are a widespread habitat in Wales with a large number of overlaps recorded. The biotope LS.LSa.MuSa.LimAre – *Limecola bathica* and *Arenicola marina* in littoral muddy sand was the only biotope noted as highly sensitive to the pressures from anchoring and mooring and areas of overlap with this habitat were identified. Reef habitat is similarly widespread although a limited number of priority areas were identified for further investigation. The following habitats also showed overlaps with anchoring, mooring and launching and several areas may benefit from follow up visits;

- Peat and clay exposures
- Atlantic salt meadow / *Salicornia* and other annuals
- Fragile sponge and anthozoan communities
- Maerl
- Egg wrack on variability salinity rock

The report documents the areas where these overlaps occur with further detail found in the GIS layers which are the main outputs of this work. It is recommended that the priority sites identified are visited to assess the true impacts from these activities.

This could be undertaken by NRW staff in collaboration with stakeholders, environmental groups / NGOs and users.

There were a number of limitations which need to be acknowledged when considering the findings of this report. These included the variable accuracy of the spatial extent of activity and habitat data, variable confidence in the measure of intensity, which in some cases may not be representative of the intensity of the activity, and uncertainty regarding the choice of habitats sensitive to the two pressures used to represent anchoring and mooring.

## Crynodeb gweithredol

Gwnaed y gwaith hwn i lywio prosiect gweithgareddau na ellir ei drwyddedu yng Nghymru, sy'n canolbwyntio ar wella rheolaeth ar weithgareddau na ellir eu trwyddedu sy'n effeithio ar gyflwr nodweddion morol ar draws rhwydwaith Safleoedd Natura 2000. Nodwyd angori, mwrio a lansio fel gweithgareddau â blaenoriaeth gan fod ganddynt y potensial i niweidio cynefinoedd sensitif trwy grafu ac aflonyddu gwely'r môr. Yn 2018/2019, cynhaliodd CNC contract i gasglu data gofodol o'r gweithgareddau hyn yng Nghymru. Mae'r adroddiad hwn yn defnyddio'r data gweithgaredd a gafwyd yn 2018/2019 ac mae'n gorgyffwrdd â chynefinoedd a ystyrir yn 'sensitif' i bwysau a achosir gan y gweithgareddau hyn. Nod y gwaith yw tynnu sylw at feysydd a all fod yn agored i niwed lle gellir disgwyl gwrthdaro, neu bod gwrthdaro eisoes yn digwydd, er mwyn canolbwyntio ar gyflwr y safle yn y dyfodol.

Cymerwyd cyfres o gamau i nodi ardaloedd a all fod yn agored i niwed. Yn gyntaf, datblygwyd y rhestr o gynefinoedd yr ystyriwyd eu bod yn sensitif i bwysau angori, mwrio a lansio. Ymgwymerwyd â chwmpasu cychwynnol i edrych a allai'r gweithgareddau hyn effeithio ar nodweddion, ac yna cynhaliwyd dadansoddiad System Gwybodaeth Ddaearyddol gan ddefnyddio'r offeryn 'Intersect' i ddarganfod lle roedd cynefinoedd sensitif yn gorgyffwrdd â gweithgareddau. Yna cafodd yr allbynnau wiriad synnwyr gyda staff lleol a ffotograffiaeth o'r awyr.

Mae'r adroddiad yn nodi nifer o safleoedd yng ngogledd Cymru lle mae morwellt yn bresennol mewn ardaloedd o angori a mwrio lle byddai'n fuddiol i wneud gwaith pellach arnynt. Mae'r adroddiad hefyd yn trafod rheolaeth lwyddiannus morwellt a maerl yn Aberdaugleddau a Sgomer. Nodwyd hefyd pa mor bwysig yw cael data ffiniau o'r cynefinoedd cyfredol.

Mae gwastadeddau llaid a gwastadeddau tywod yn gynefin eang yng Nghymru gyda nifer fawr o orgyffwrdd wedi'u cofnodi. Y biotop LS.LSa.MuSa.LimAre - *Limecola bathica* ac *Arenicola marina* mewn tywod mwdlyd arfordirol oedd yr unig fiotop a nodwyd fel un hynod sensitif i'r pwysau o angori a mwrio, a nodwyd ardaloedd o orgyffwrdd â'r cynefin hwn. Yn yr un modd, mae cynefin y riff yn eang er y nodwyd nifer gyfyngedig o feysydd blaenoriaeth ar gyfer ymchwiliad pellach. Roedd y cynefinoedd canlynol hefyd yn dangos gorgyffwrdd ag angori, mwrio a lansio, a gall sawl ardal elwa o ymweliadau dilynol;

- Datguddiadau mawn a chlai
- Dôl halen yr Iwerydd
- Cymunedau sbwng ac anthosoaid bregus
- Maerl
- Salicornia a rhywogaethau unflwydd eraill
- Gwymon codog bras ar graig halwynedd amrywiant



Mae'r adroddiad yn dogfennu'r meysydd lle mae'r gorgyffyrddiadau hyn yn digwydd gyda mwy o fanylion yn yr haenau Systemau Gwybodaeth Ddaearyddol sef prif allbynnau'r gwaith hwn. Argymhellir ymweld â'r safleoedd â blaenoriaeth a nodwyd i asesu gwir effeithiau'r gweithgareddau hyn. Gall staff CNC wneud hyn ar y cyd â rhanddeiliaid, grwpiau amgylcheddol / cyrff anllywodraethol a defnyddwyr.

Roedd angen cydnabod nifer o gyfyngiadau wrth ystyried canfyddiadau'r adroddiad hwn. Roedd y rhain yn cynnwys cywirdeb amrywiol ehangder gofodol gweithgaredd a data cynefinoedd, hyder amrywiol wrth fesur dwyster, na fydd yn cynrychioli dwyster y gweithgaredd mewn rhai achosion, ac ansicrwydd ynghylch y dewis o gynefinoedd sy'n sensitif i'r ddau fath o bwysau a ddefnyddir i gynrychioli angori a mwrio.

# 1. Introduction

## 1.1 Aims and objectives

This piece of work is being carried out to inform the Wales non-licensable activities project, and is included as an action in the 2020/21 Network Management Action Plan. The Wales non-licensable activities project has developed directly from the Condition Improvement Project (CIP), which aimed to develop and deliver a prioritised work programme focussing on actions that deliver maximum impacts on the condition of marine features across the N2K network.

The overarching aim of the Wales non-licensable activities project focusses on the non-licensable activities of greatest concern at the network scale and aims to develop the evidence base on the spatial and temporal distribution, intensity and impacts of these activities on MPA features in the network. It involves working with NRW staff and appropriate stakeholders to identify and implement feasible and effective management interventions, where required, to mitigate impacts.

Anchoring, mooring and launching was identified as one of the priority non-licensable activities in a project workshop in May 2018, principally due to the potential these activities have to cause damage to sensitive habitats. Subsequently in 2018/19, NRW ran a contract to gather data on the locations of these activities in Wales.

This report uses the activity data that was obtained from this contract and overlays it with maps NRW hold of habitats deemed as 'sensitive' to these activities. The aim is to highlight potentially vulnerable areas where conflict may be expected. These areas should be considered for further scrutiny and ground truthing and survey, including diving, is likely to be required in most cases to establish whether a true impact exists.

Although there is a focus on MPAs in the Wales non-licensable activities project, this work also encompasses sites which are outside of MPAs which are being potentially impacted, especially if the habitats affected are listed under Section 7 of the Environment (Wales) Act 2016.

## 2. Methodology

This work was carried out sequentially in distinct stages.

### **Stage 1. Identify the habitats which were considered to be potentially sensitive to the activities of anchoring, mooring and launching.**

The decision was taken to use a list of sensitive habitats / biotopes that had been developed for an NRW workstream in 2018 and a summary of the rationale for inclusion of these habitats is given in Appendix 1. The habitats in this list were taken from the list of Annex 1 habitats, OSPAR / Section 7 habitats and also individual biotopes from the Wales intertidal biotope map.

The habitats / biotopes on this list were identified as being highly sensitive to the following two pressures, developed by the Marine Life Information Network (MarLIN), part of the Marine Biological Association.

<https://www.marlin.ac.uk/sensitivity/SNCB-benchmarks>

- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
- Abrasion/disturbance of the substrate on the surface of the seabed

It was considered that the activities of anchoring, mooring and launching caused the abovementioned pressures and therefore the list of habitats below were identified here as applicable;

- Maerl (Section 7, component of Annex 1 features)
- Seagrass beds (Section 7, component of Annex 1 features)
- Mudflats and sandflats (Annex 1, Intertidal mudflats Section 7)
- Reefs (Annex 1)
- *Ostrea edulis* (Section 7)
- Horse mussel beds (Annex 1 (reef), Section 7)
- Seapens and burrowing megafauna (Section 7)
- Coastal lagoons (Annex 1, saline lagoons Section 7)
- Estuaries (Annex 1)
- Large shallow inlets and bays (Annex 1)
- Atlantic salt meadows (Annex 1, coastal saltmarsh Section 7)
- Peat and Clay exposures (Section 7)
- *Salicornia* and other annuals (Annex 1)
- Egg wrack on variable salinity rock (sensitive biotopes)
- Fragile sponge and anthozoan communities on subtidal rocky habitats (Section 7)

The NRW GIS habitat layers that were used for this piece of work are given in Appendix 2.

It should be noted that any overlaps of activities with Annex 1 habitats would only show when they were within SAC boundaries, as opposed to the other habitats (section 7 and biotopes) which are found within and outside of SACs.

## **Stage 2: Initial GIS analysis to identify habitats that potentially overlap with anchoring, mooring or launching**

The first task was to ascertain which habitats, of those listed above, could physically overlap with the activities in order to focus the task. This exercise was done through a combination of considering the feasibility of overlaps (e.g. coastal lagoons excluded as no overlap likely with these activities) and also an initial sense check. Tables 1.1- 3.2 show the list of habitats which show potential overlaps with anchoring, mooring and launching.

The decision was taken to omit the Annex 1 habitat features Large Shallow Inlets and Bays and Estuaries. These designated features are large and diverse with many nested features. It was considered more useful if this exercise concentrated on a smaller range of features which would overlap with more specific features.

**Table 1.1** Overlap between anchoring and the list of ‘sensitive’ habitats

Habitat	Notes on overlap of Anchoring and sensitive habitats
Mudflats and sandflats	Many overlaps
Reefs	Many overlaps
Seagrass beds	Overlap in Anglesey, Llŷn and Milford Haven
Atlantic salt meadows	Small overlaps many considered accidental
Peat and clay exposures	Small overlaps
<i>Salicornia</i> and other annuals	Small overlaps
Egg wrack on variable salinity rock	Small overlaps
Maerl	Overlap in Milford Haven only
<i>Ostrea edulis</i>	Overlap in Milford Haven only

**Table 1.2.** Habitats which were removed from the assessment

Habitats not included	Notes on overlap of Anchoring and sensitive habitats
Horse mussels	Removed - No overlap with anchoring data
Seapens and burrowing megafauna	Removed - No overlap with anchoring data
Coastal lagoons	Removed - Not applicable to activity
Estuaries	Removed - Large feature
Large shallow inlets and bays	Removed - Large feature

**Table 2.1.** The tables below shows where there is overlap between mooring and the list of 'sensitive' habitats

Habitat	Notes on overlap of Mooring and sensitive habitats
Mudflats and sandflats	Many overlaps
Reefs	Many overlaps
Seagrass beds	Many overlaps
Atlantic salt meadows	Small overlaps many considered accidental
Peat and clay exposures	Extremely small overlaps
<i>Salicornia</i> and other annuals	Extremely small overlaps – Dyfi, Barmouth, Mochras, Dee
Maerl	Overlap (small area) in Milford Haven
<i>Ostrea edulis</i>	Overlap in Milford Haven only
Egg wrack on variable salinity rock	Small overlaps

**Table 2.2.** Habitats which were removed from the assessment

Habitats not included	Notes on overlap of Mooring and sensitive habitats
Horse mussels	Removed - No overlap with mooring data
Seapens and burrowing megafauna	Removed - No overlap with mooring data
Coastal lagoons	Removed - Not applicable to activity
Estuaries	Removed - Large feature
Large shallow inlets and bays	Removed Large feature

**Table 3.1.** The table below shows where there is overlap between launching and the list of 'sensitive' habitats

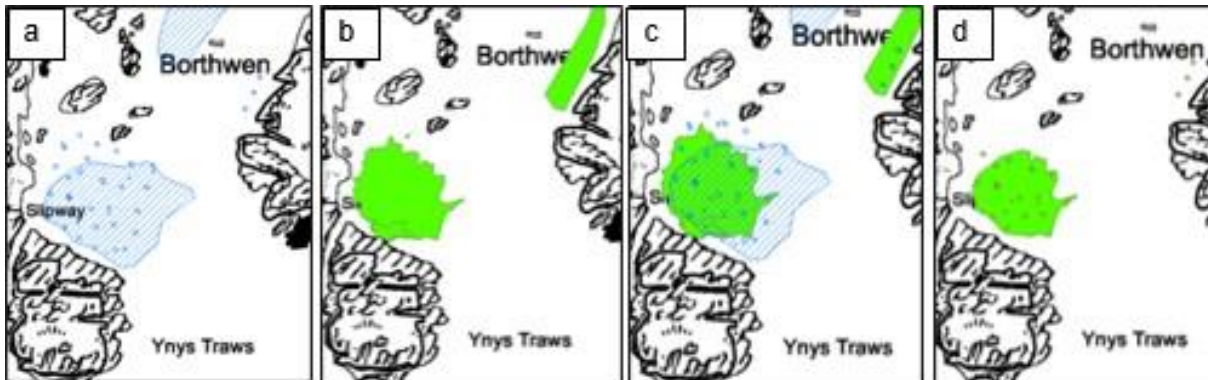
Habitat	Notes on overlap of launching and sensitive habitats
Mudflats and sandflats	Many overlaps
Reefs	Many overlaps
Atlantic salt meadows	Small number of overlaps
Peat and clay exposures	Small number of overlaps
<i>Salicornia</i> and other annuals	Small number of overlaps
Seagrass beds	Small number of overlaps
Egg wrack on variable salinity rock	Small number of overlaps

**Table 3.2.** Habitats which were removed from the assessment

Habitat not included	Notes on overlap of launching and sensitive habitats
Coastal lagoons	Removed - Not applicable to activity
Estuaries	Removed - Large feature
Large shallow inlets and bays	Removed - Large feature
Horse mussels	Removed - No overlaps with launching data
Maerl	Removed - No overlaps with launching data
<i>Ostrea edulis</i>	Removed - No overlaps with launching data
Seapens and burrowing megafauna	Removed - No overlaps with launching data

## Stage 3. GIS analysis

GIS analysis using the Geoprocessing tool 'Intersect' was carried out to identify overlaps with sensitive habitats and the three activities. An example for seagrass is shown below:



**Figure 1.** a) Mooring layer, b) Seagrass habitat layer, c) Overlap of the two layers, identified by ArcMap 'Intersect' tool, d) Seagrass layer cut to shape of mooring layer

## Stage 4. 'Ground truthing' results

As the GIS analysis was purely based on spatial overlaps, further work was briefly carried out looking at the overlaps on aerial imagery to assess likelihood of a true overlap. In addition, site officers were approached for any on the ground knowledge of any impacts known to be occurring and their likelihood.

## 3. Outputs

The outputs below summarise the main findings of this analysis process (Stage 3). See Appendix 3 for a more detailed summary of the areas of overlap. The GIS layers are the principal output of this work and should be referred to for further details. See data archive on page 45.

### 3.1 Anchoring

#### Seagrass

There were four distinct areas where overlap was recognised; west Anglesey, the Llŷn Peninsula, Skomer and Milford Haven. The majority of the areas of overlaps in Milford Haven were noted as having High intensity anchoring (17 of the 19 polygons).

On the Llŷn peninsula, there are two distinct areas with identified overlaps. These are Criccieth, on the south Llŷn, which has low intensity mooring noted and Porthdinlleian, on the north coast close to Nefyn. Porthdinlleian has been the focus of much work to manage the impacts of anchoring and mooring on seagrass and will not be a main focus of discussions in this report.

The remaining areas of overlaps with seagrass and anchoring were in West Anglesey; Borth Wen (near Rhoscolyn) and a bay just north of Trearddur Bay, near Porth yr Afon.

## Maerl

In Wales, only one maerl bed is found, which is in Milford Haven. There were four polygons which were noted as having medium and high intensity anchoring on the maerlbed, located just to the west of South Hook Point.

## Mudflats and Sandflats

There were a significant number of locations (108 polygons) where mudflats and sandflats overlapped with anchoring areas in Wales. These are principally in the Menai Strait, Milford Haven and Pembrokeshire coast and the Severn Estuary, where SACs have with mudflats and sandflats as a feature. Other locations include small areas of the Dee Estuary, Maltraeth Bay Anglesey, Porthdinlleian (Llŷn), Porthmadog, Barmouth, Aberdyfi, Gateholm/Little Haven, Ramsey Island and Saundersfoot.

## Reefs

The 'reef' layer used initially for this exercise just showed areas of 'definite' subtidal and intertidal reef. Further work looking at overlap with areas of possible reef was also carried out in the SACs with reef as a feature and is also presented in the GIS outputs as separate layers.

There were a significant number of locations where definite reefs overlapped with anchoring areas with 141 polygons spread throughout Wales. The main locations where this occurred (in SACs with reef as a feature) was around Milford Haven, the Llŷn Peninsula and Bardsey and Menai Strait. Other areas where overlaps occurred include Llandudno, Moelfre (Anglesey), New Quay, Ynys Lloctyn, Aberdaron, Aberporth, Solva, Ramsay, Abersoch, St Annes Head, Stackpole and Whitesands.

Within the Menai Strait, there were four areas which overlapped with definite reef, although there were many further areas (121 polygons) along the length of the Menai Strait where anchoring overlapped with 'possible reef'. Similarly in Pen Llŷn a'r Sarnau, 26 further polygons overlapped with potential reef mainly around the Tudwal's and Abersoch. Milford Haven has over 200 further polygons of possible reef that overlaps with anchoring throughout the Haven. In Cardigan Bay SAC, the addition of possible reef didn't add to the total of reef affected by anchoring significantly and in the Severn, potential *Sabellaria* reef points were picked up south of Cardiff which overlapped with a large area of likely anchoring.

## Ostrea edulis

*Ostrea edulis* (native oyster) beds are only found in Milford Haven. There are 3 locations where overlap has been identified as possible with this habitat.

## Atlantic Salt Meadow

The overlaps that has been identified with Atlantic salt meadow all occur in the Milford Haven waterway, the majority being in Coshaston Pill and a small area in Landshipping Quay (Low intensity anchoring). It is considered that the anchoring area mapped in this case is probably over represented and that anchoring is unlikely to affect this habitat.



## Peat and Clay exposures

There was overlap of peat and clay exposures with anchoring at 5 locations in Wales. These were two on west Anglesey (Borthwen and Trearddur Bay), also on the Menai Strait west of Caernarfon, off Mumbles beach and Porth Eynon (Gower).

## *Salicornia* and other annuals

There is one reported overlap of *Salicornia* and other annuals with anchoring in the mouth of the Mawddach estuary. This overlaps with a polygon identified by local boaters and RYA clubs and also the SAC officer and Gwynedd Parks officer. It is an area of 0.3ha with Low estimated anchoring and therefore it is unlikely to pose a significant issue to this habitat.

## Egg wrack on variable salinity rock

There were two areas in Wales where this habitat was noted as overlapping with anchoring. These were Abersoch and Milford Haven (Landshipping Quay, Lawrenny, Mill Bay and Barnlake Point).

## Fragile sponge and anthozoan communities on subtidal rocky habitats

There are 5 locations in Wales where this habitat is shown to overlap with potential anchoring areas. These locations are Holy Island (Abraham's Bosom near South Stack, Anglesey), Bardsey / Ynys Enlli (Bae Felen, Llŷn), Skomer (Rye Rocks, Pembrokeshire), the mouth of the Milford Haven Waterway (south of Annes Head) and close in to Hakin Point, Milford Haven. See Figure 13 for maps of these locations.

## 3.2 Mooring

### Seagrass

Similarly to anchoring, overlaps with mooring and seagrass have been noted in three distinct areas; west Anglesey (Cymyran Strait only small overlap), the Llŷn Peninsula (Porthdinllaen and Penychain), and Milford Haven.

### Maerl

Similarly to anchoring, the overlap of maerl and mooring was only noted in a small area by South Hook jetty, Milford Haven. It is unclear how many recreational craft moor close to this jetty.

### Mudflats and Sandflats

Similarly with anchoring, there are many areas where mudflats and sandflats overlap with mooring areas and there are 811 separate polygons identified. There are spread around Wales, with concentrations in the Dee Estuary, Conwy, Menai Strait and southwest Anglesey, Porthdinllaen, Glaslyn-Dwryd, Mawddach and Dyfi estuaries, Milford Haven, Three Rivers, Loughour Estuary and Severn Estuary.

## Reefs

The 'reef' layer used initially for this exercise just showed areas of 'definite' subtidal and intertidal reef. Further work looking at overlap with areas of possible reef was also carried out in the SACs with reef as a feature and is also presented in the GIS outputs as separate layers.

There were 296 polygons where definite reef habitat overlapped with mooring areas. The principal areas where this occurred was the Menai Strait, Llŷn Peninsula, Mawddach, and Dyfi estuaries, Stackpole and St Brides, Milford Haven, Aberporth, Llanbedrog and Ramsay Island.

In the Menai Strait, there were a handful of locations where mooring overlapped with 'definite' reef feature, however, when 'potential /possible' reef was included, more and larger areas were included in the analysis, especially in the mid Strait area and around Menai Bridge. In Pen Llŷn a'r Sarnau, a further 4 general locations of potential reef were impacted around Llanbedrog, Porth Fechan and Aberdaron. Furthermore, in Pembrokeshire Marine there are significant areas of 'possible' reef that overlap with mooring, approximately 158 subtidal reef polygons and 700 intertidal polygons. In Cardigan Bay, one significant area at New Quay has overlap of mooring and possible reef.

## Ostrea edulis

Overlaps with mooring and *Ostrea edulis* are only found in Milford Haven waterway in two locations.

## Atlantic Salt Meadow

There are 180 polygons showing overlap between Atlantic salt meadow and mooring. The majority of overlap is in Milford Haven (Angle Bay, Sandy Haven, Castle Rocks, Llangwm Pill and Western Cleddau) with other notable areas being River Dee (Mostyn Docks), Llandwrog (Artro), Barmouth, Laugharne, Afon Tywi, Gwendraeth (Carmarthen Bay Holiday Park) and Newport.

## Peat and Clay exposures

There are 5 locations where overlaps occur with mooring; west Anglesey (Borth Wen and Trearddur Bay), Gwendraeth (Carmarthen Bay Holiday Park), Menai Strait, the Mumbles and Newport.

## Salicornia and other annuals

There were four locations in Wales where *Salicornia* overlapped with mooring. These were Barmouth (0.05ha), Llandanwg (Llanbedr 0.06ha), River Dee (Mostyn Dock 0.054ha where there are boats seen moored on aerial photography) and River Loughor (Dalton's point 0.068ha). All were noted as low intensity mooring (apart from one polygon at Llandanwg).

## Egg wrack on variable salinity rock

There are 6 locations in Wales where Egg wrack (*Ascophyllum*) overlaps with mooring areas. These are the Mawddach, Bury Port (although it is considered that mooring takes

place mainly in the centre and not around the edges of the port where the egg wrack is mapped), Milford Haven (e.g. Landshipping Quay, Ferry Hill, Burton, Castle Pilland Pennar Mouth), Newport (Afon Nyfer mouth), Dyfi (Penhelig) and Solva (Trinity Quay, Pembrokeshire).

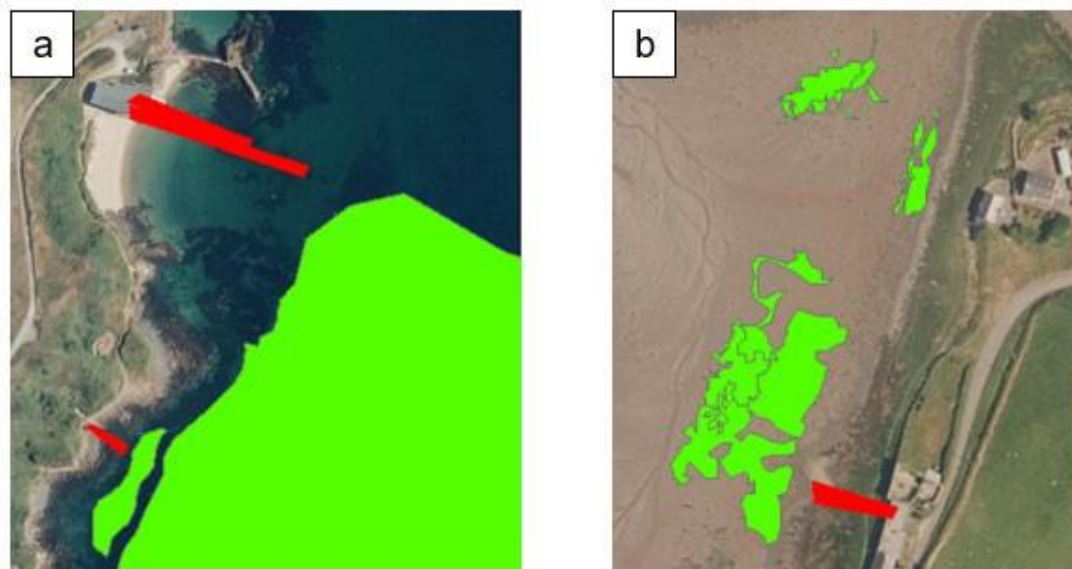
## **Fragile sponge and anthozoan communities on subtidal rocky habitats**

There is one location where this habitat overlaps with potential mooring areas. This is just off Hakin Point, Milford Haven. See Figure 13.

### **3.3 Launching**

#### **Seagrass**

Two examples of where seagrass comes in very close proximity to a launching site is at Porthdinllaen and Y Foryd. The overlaps were identified due to a 50m buffer around seagrass points. Other areas where slipways occur in close proximity to launching sites are in Milford Haven (Hakin, Angle Point and West Llanian Pill).



**Figure 2.** Slipways (red) at a) Porth Dinllaen and b) Y Foryd showing close proximity of seagrass (green).

## Maerl

There are no overlaps with launching sites and Maerl.

## Mudflats and Sandflats

There are 128 instances where a slipway or launching site overlapped with mudflats and sandflats feature. Examples include Barmouth, Borth y Guest, Cardiff, Milford Haven and Cleddau, Kidwelly, Laugharne, Llanelli, Llanfairfechan, Menai Strait, Morfa Bychan, Newport, Porth Nefyn, Prestatyn, River Dee, River Dyfi, River Loughor, River Towy, Saundersfoot, South and West Anglesey, Tenby and Y Foryd.

## Reefs

The 'reef' layer used initially for this exercise just showed areas of 'definite' subtidal and intertidal reef. Further working looking at overlap with areas of possible reef was also carried out in the SACs with reef as a feature and is also presented in the GIS outputs.

There are 177 instances of slipways or launching sites which overlap with reef habitats and it is likely in many cases that at low tide, craft will move across 'reef' feature to access the water. However, at some of the larger, longer slipways there may be a low likelihood of the craft coming into contact with the substrate although overlaps are identified.

The locations where overlap have been identified are; Abersoch, Barmouth, Milford Haven and Cleddau, Llandanwg, Menai Strait, Porthdinllaen, Dyfi, Mawddach, Solva, South Anglesey and St Davids.

## Ostrea edulis

There are no overlaps with launching areas and *Ostrea edulis*.

## Atlantic Salt Meadow

There are approximately 10 locations where this habitat overlaps with launching sites. These are; Barmouth, Chepstow (Red Cliff), Milford Haven (many sites) and Cleddau, Kidwelly, Laugharne, Pembroke River, River Dee, River Loughor, River Tywi and Maltraeth (Anglesey).

## Peat and Clay exposures

There is one location where Peat and Clay overlaps with a launching site at Rhyl, north Wales.

## *Salicornia* and other annuals

There are two locations where *Salicornia* overlaps with launching and slipways, both in the Dee Estuary; Flint IRB slipway and Mostyn Dock.

## Egg wrack on variable salinity rock

There are 6 locations in Wales where egg wrack overlaps with slipways and launching areas. There are some locations where the egg wrack habitat is located to the side of the slipway and although showing overlap, is unlikely to be affected by any launching event. These are; Abersoch (the old lifeboat slipway, Burry Port and Solva (Pembrokeshire). There are two locations in the Dyfi where overlaps could occur, as well as a location in the Mawddach, Milford Haven (Barrallier Quay) and Cleddau (opposite Lawrenny Quay).

## Fragile sponge and anthozoan communities on subtidal rocky habitats

There are no overlaps with this habitat and launching.

A full list of locations where overlaps occur are given in Appendix 3 and the GIS files may also be available (see Data Archive).

## 4. Discussion

In this section, a more detailed consideration is given to the areas of identified overlaps and a number of factors are considered in order to prioritise locations for further investigation. These factors include;

- Sensitivity of the habitat
- Amount of the habitat in Wales
- Extent of the overlaps with the anchoring / mooring / launching
- Likelihood of true overlaps (as opposed to mapping errors)
- Whether any measures are in place currently to manage the habitat

Each habitat is discussed and conclusions drawn regarding recommended next steps, taking into consideration the factors above. In many cases, overlaps that were identified through

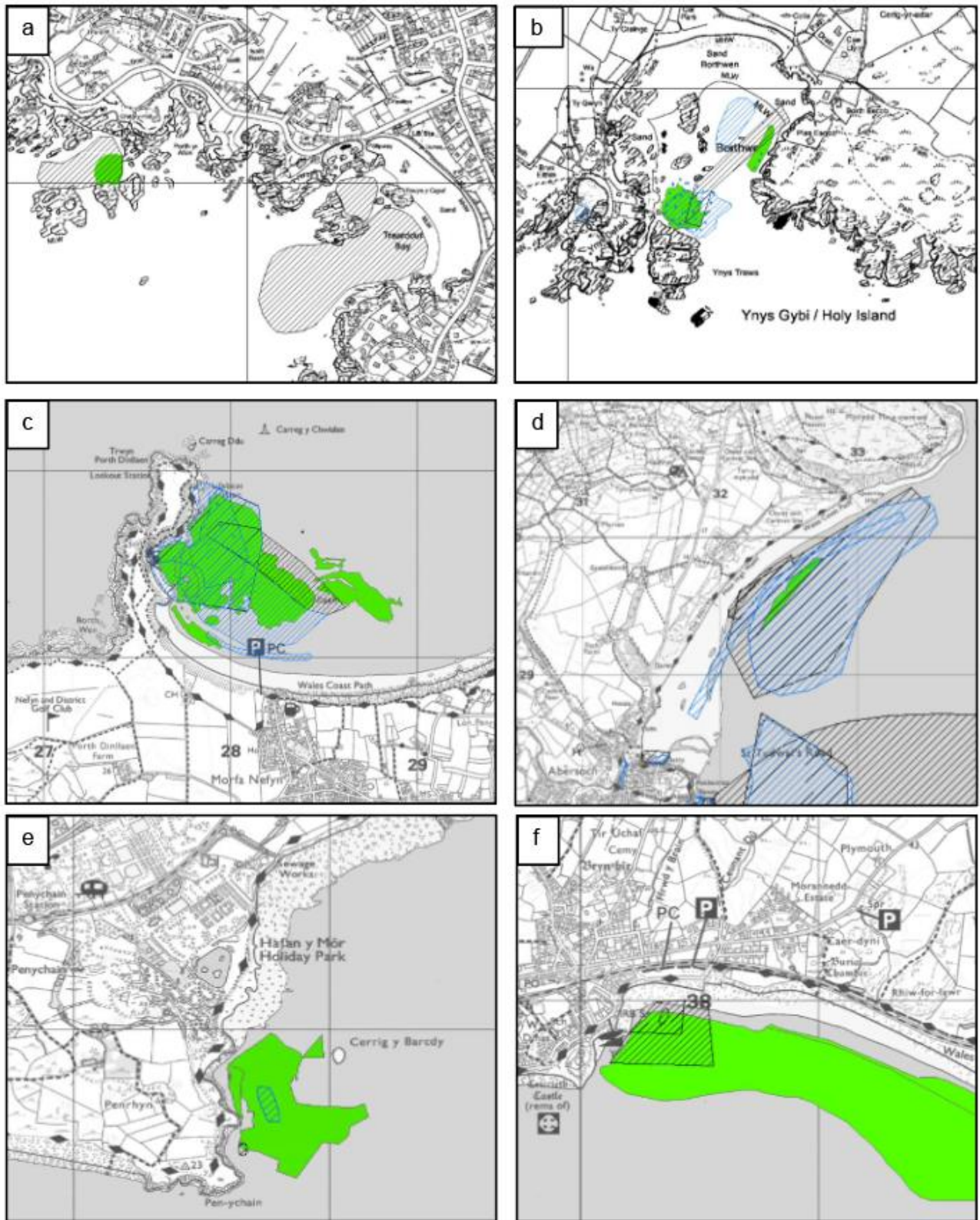
this process were found to be at sites where existing management measures are in place, which provided confidence in the process.

## 4.1 Seagrass

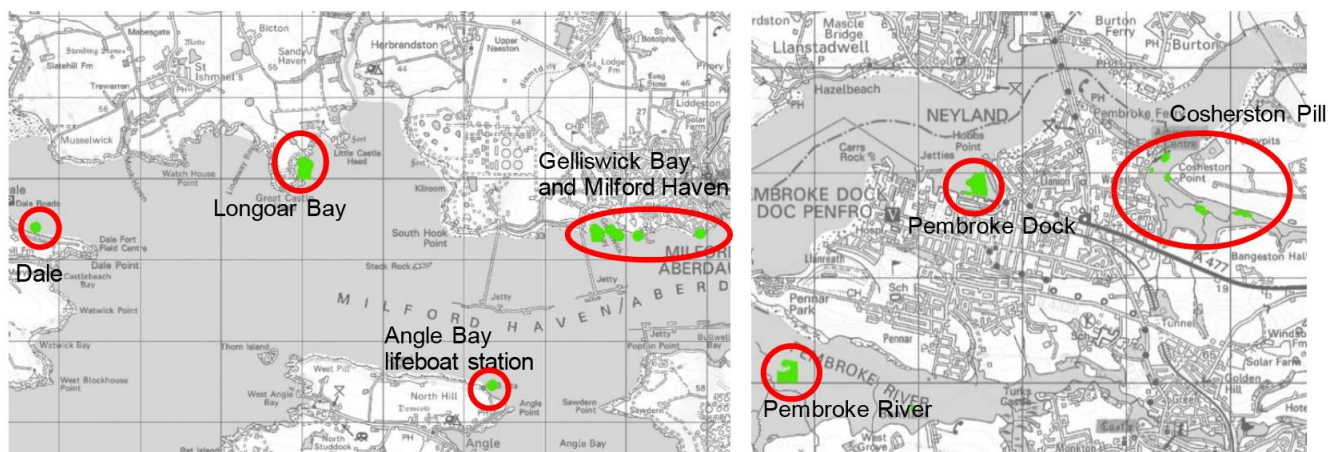
Of the habitats investigated, seagrass is likely to be one of the most vulnerable to anchoring, mooring and launching and a number of reports demonstrate how this habitat can be damaged by these activities (d'Avack 2014, Davies *et al.*, 2017). The importance of impacts on this habitat is elevated as seagrass has a limited distribution in Wales and has been subject to historic declines. Therefore, locations where these activities overlap with this habitat are prioritised for investigation. The areas where overlaps were shown to occur from the mapping are:

- West Anglesey (Trearddur Bay, Borth Wen and Cymyran Strait)
- Porthdinllaen (north Llŷn)
- The Warren, Abersoch (south Llŷn)
- Pen ychain (south Llŷn)
- Criccieth (south Llŷn)
- Milford Haven (Dale, Longoar Bay, Angle Point, Gelliswick, Pembroke River, Pembroke Dock and Cosherston Pill)

See Figures 3 and 4 below for maps of these areas.



**Figure 3.** Overlaps of seagrass with anchoring and mooring areas at a. Trearddur Bay(point record with buffer) b. Borthwen, west Anglesey. c. Porthdinllaen (LIÿn), d. The Warren, Abersoch (LIÿn) e. Pen y chain (LIÿn) f. Criccieth (LIÿn). Anchoring (black hatch), mooring (blue hatch).



**Figure 4.** Locations in Milford Haven where overlaps of seagrass and anchoring and mooring were shown to occur.

Consultation with NRW staff in north Wales has indicated that further investigation may be valuable at the sites identified in **west Anglesey**. Anchoring and mooring on seagrass is possible at these locations and little information is available on the current extent of the seagrass at these locations and any impacts of these activities. It should be noted that the sites at Trearddur Bay and Borthwen do not lie within a SAC with seagrass as a component feature. The **Cymyran Strait**, however, lies within the Beddmanarch – Cymyran Bay SSSI, which has seagrass as a component feature.

Seagrass is listed under Section 7 of the Environment (Wales) Act 2016 and is a habitat of ‘Principal Importance’ for the purpose of maintaining and enhancing biodiversity in Wales. NRW also have a duty under Section 6 to maintain and enhance biodiversity and promote the resilience of ecosystems.

Overlaps of anchoring and mooring with seagrass was notable at **Porthdinllaen** on the north Llŷn. This site, and the following north Wales sites below, are within the Pen Llŷn a’r Sarnau SAC. Apart from Porthdinllaen, are all part of the Large Shallow Inlets and Bays feature and where intertidal, part of the intertidal mudflats and sandflats feature. Porthdinllaen is one of the largest known seagrass beds in Wales and is the site of the Porthdinllaen Seagrass Project led by the Pen Llŷn a’r Sarnau SAC Officer. The aims of this ongoing project include adapting existing moorings to reduce their impact and developing an eco-mooring system suitable for the bay<sup>1</sup>. This area has not been the focus of this report due to the ongoing project work at the site.

A new area of seagrass identified in 2019 is located off **the Warren, north of Abersoch**. The seagrass bed is newly mapped and is likely to be patchy in nature rather than a large continuous bed. The area of seagrass is noted to have both anchoring and mooring within it, with seasonal moorings and council buoys marking outspeed / swimming areas. Anchoring usually occurs further north under the Llanbedrog headland. Further work could usefully be carried out here to ascertain whether any impacts of boating on seagrass are occurring.

<sup>1</sup> [https://www.rya.org.uk/SiteCollectionDocuments/legal/Web%20Documents/Environment/EFM\\_documents/Oct2017\\_workshop\\_AlisonHargrave.pdf](https://www.rya.org.uk/SiteCollectionDocuments/legal/Web%20Documents/Environment/EFM_documents/Oct2017_workshop_AlisonHargrave.pdf)



The seagrass within the bay at Porth Fechan, **Pen ychain** (south Llŷn) is believed to be protected by buoys restricting access into the bay. However, the area of seagrass at this site has been recently mapped and now is documented to extend further out and extend to Cerrig y Barcody. There is an area of potential mooring (owner currently unknown) and anchoring shown to overlap with the bed. Little current evidence was available regarding any impacts of anchoring and mooring in this location and further investigation would be recommended.

The seagrass bed at **Criccieth** is shown to be potentially affected by low intensity anchoring activity. Site knowledge indicates that anchoring is likely to be close in at this location where sediments are mobile and anchoring is likely to be small coastal craft when they are launching and recovering. It is also a possibility that the seagrass extent is overestimated in this area and has very low confidence. Therefore, when considering these factors, it is unlikely that significant damage is occurring, but further investigation would be valuable. Seagrass is likely to be on the edge of its growing tolerance in this location, so potentially has very little resilience to impacts such as anchoring.

Anchoring was noted to overlap with seagrass at **Skomer MCZ**. However, Skomer MCZ has a no-anchor zone in place in North Haven and provides visitor moorings outside of the seagrass bed between April and October. Compliance is generally good, aided by patrol vessels, and the zone is considered effective in protecting the seagrass at the site. Therefore, in this case the overlap is not considered to be accurate.

Consultation with staff in Pembrokeshire Marine SAC has indicated that of the seven sites which are identified as having potential conflicts in **Milford Haven** from anchoring and mooring from GIS mapping, three sites are unlikely to be impacted due to the low intensity of the activity; Pembroke River, Pembroke Dock and Coshaston Pill. Anecdotal evidence suggests that seagrass has increased in Pembroke River and Pembroke Dock over the last 10 years. Dale has limited current seagrass records and there is currently a small area of seagrass which could be at risk, especially from anchoring. Dale is currently also the location of an ongoing restoration trial<sup>2</sup>. As part of the restoration project, three visitor moorings have been installed in order to discourage anchoring within the newly planted bed (see Figure 5). It is expected that as long as seagrass grows as hoped, the site will be considered within the current suite of sensitive habitat area zones as a voluntary no-anchoring site. Anchoring damage can be minimised if visitor moorings can be maintained and in place over the long-term.

Voluntary no-anchor zones to protect sensitive habitats are already established in Longoar Bay (which offers two visitor moorings) and Gelliswick to Lindsay Bay (see Figure 6). It is noted that some areas of seagrass in front of Hakin area of Milford Haven are currently not located in the voluntary no-anchor zone. The mapping of seagrass that occurred in 2019 expanded the extent of seagrass in this location (shown in red).

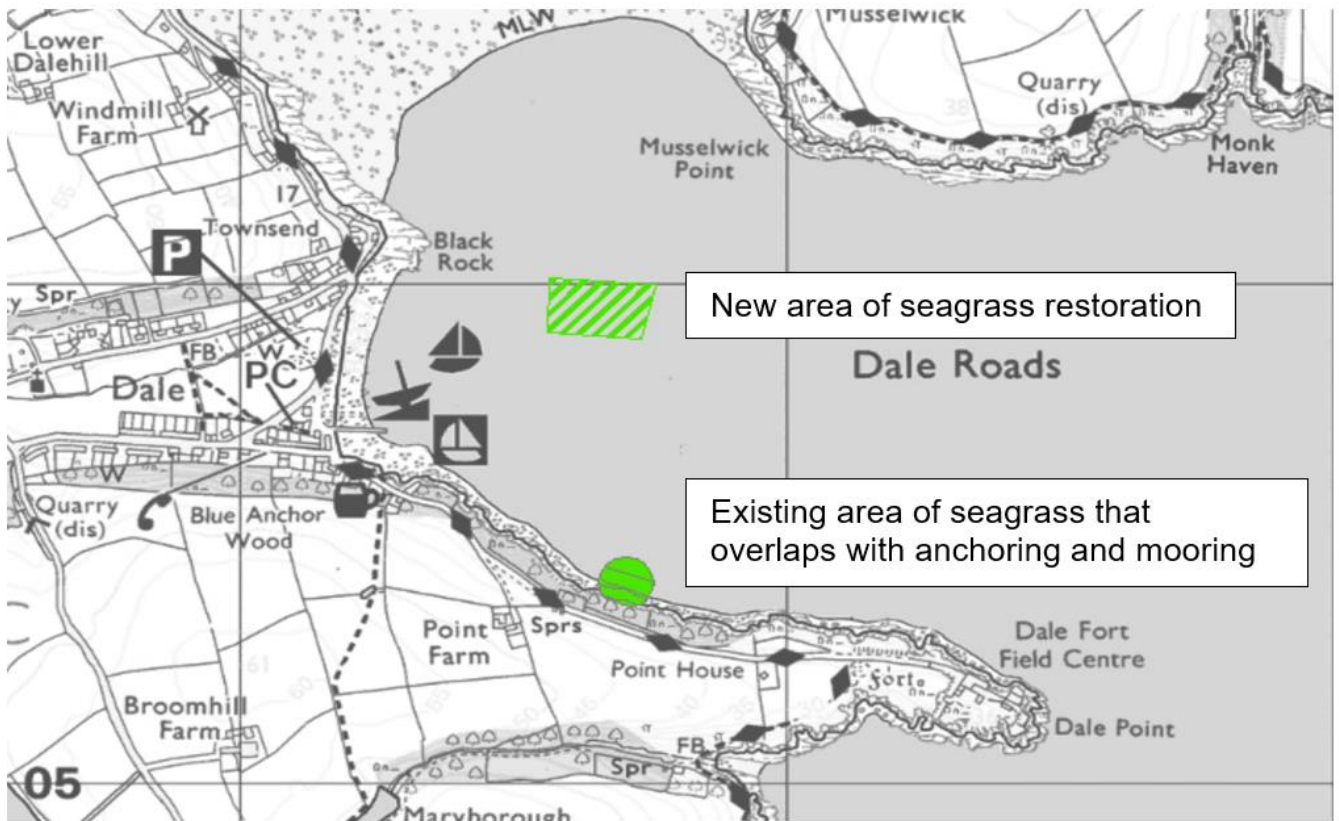
There is also another sensitive habitat voluntary no-anchor zone, Angle Bay Point and Ellen's Well, which is constituted not in a block but in 4 distinct patches having diameters of approximately 50m<sup>3</sup>. As it was considered that recreational mooring and anchoring in this area was very low but local fishers used the area for lobster cages and prawn pots, they were provided the coordinates to avoid these areas on a voluntary basis. It is likely

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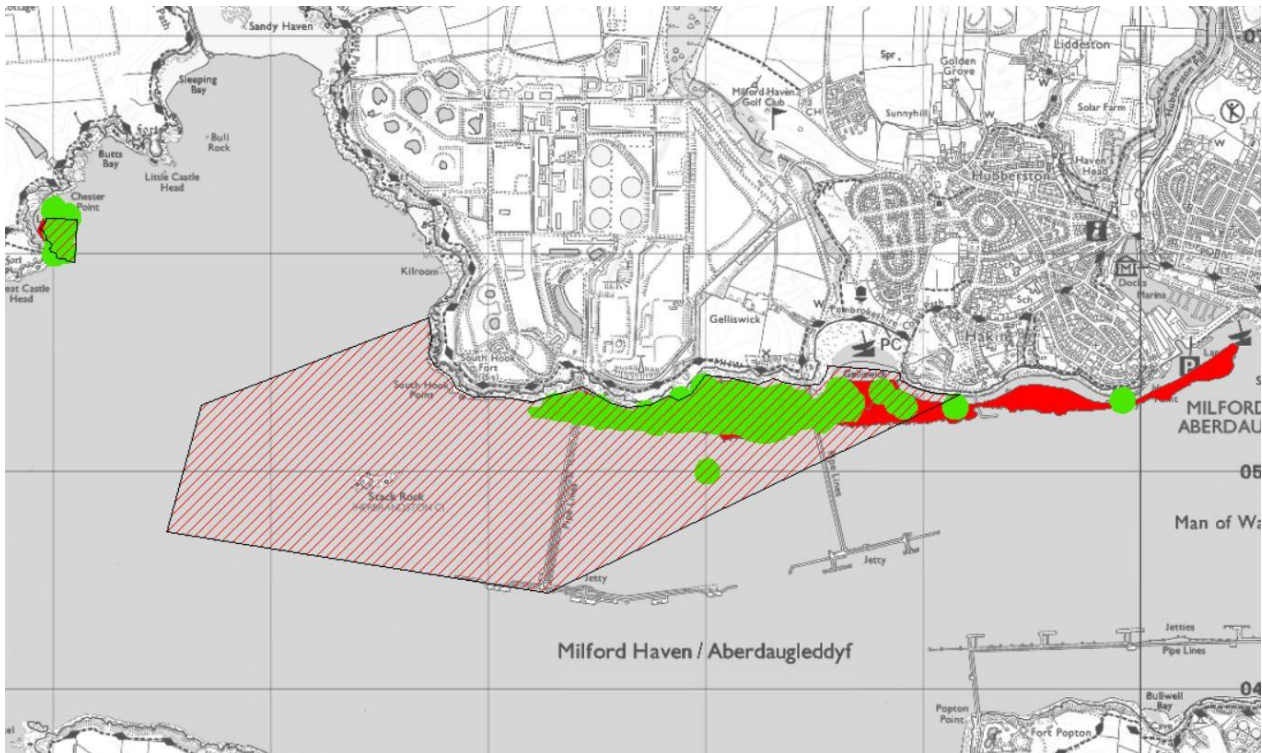
<sup>2</sup> <https://www.pembrokeshirecoastalforum.org.uk/seagrassoceanrescue/>

<sup>3</sup> [http://www.pembrokeshiremarinesac.org.uk/english/special/voluntary\\_sensitive\\_habitat\\_protection\\_zones.htm](http://www.pembrokeshiremarinesac.org.uk/english/special/voluntary_sensitive_habitat_protection_zones.htm)

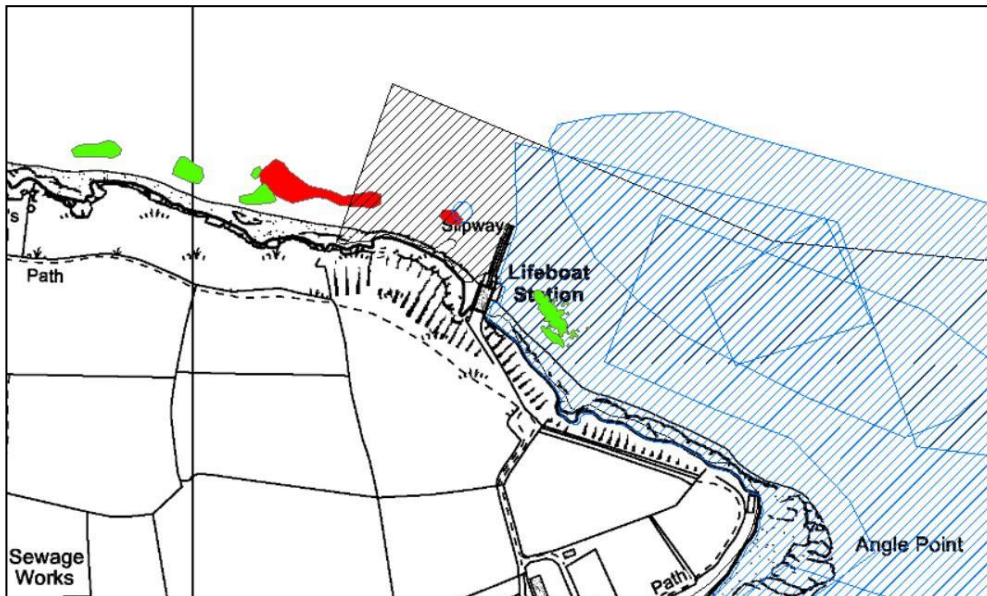
that as this was done in 2011/12, knowledge of the zone may now be lost and adherence if likely to be low. The extent and condition of the seagrass bed at this location appears to have increased since this time, shown in Figure 7.



**Figure 5.** Map showing the proposed new area of seagrass in Dale, alongside the existing area of seagrass which was highlighted as being potential impacted by anchoring and mooring.



**Figure 6.** Two voluntary no-anchor zones in Milford Haven (red hatch) established by the Pembrokeshire Marine SAC RAG and Milford Haven Port Authority to protect seagrass. Longoar Bay (left) and Gelliswick to Lindsay Bay Sensitive habitat (right). Green is pre-2019 seagrass extents. Red is additional 2019 seagrass extent.



**Figure 7.** Voluntary no-anchor zone at Angle Point, which coincides with the areas of seagrass in 2011 (green). Red represents additional seagrass extent in 2019. Black hatch – potential anchoring area. Blue hatch – potential mooring area.

### Recommendations:

In north Wales, further investigation could be conducted at the following sites to assess the potential damage to seagrass by anchoring and mooring in these locations;

- Trearddur Bay
- Borthwen
- Cymyran Strait
- Warren Abersoch
- Pen ychain
- Criccieth

If areas of **moorings** are identified as overlapping with seagrass, and evidence of damage is found, follow up work with the mooring owners could be investigated to identify potential management options in collaboration with relevant partners and MPA managers.

In South Wales, The Milford Haven Port Authority's Water Ranger 'enforces' the zone at Longoar Bay, encouraging boaters to make use the buoys provided. Compliance is generally deemed to be good and the majority of users now use the mooring buoys instead of anchoring in the seagrass. The mooring buoys are owned and maintained by the Port Authority and the SAC RAG paid for maintenance up until 2019. The mooring buoys require annual maintenance and a recommendation is that adequate funding and resources is secured to allow the mooring buoys to be maintained in the future to discourage anchoring at Longoar long term.

If compliance with voluntary no-anchor zones reduces, a case study looking at better understanding the reasons why people do not adhere to the zones, potentially including interviews to understand users knowledge and behaviour, may be a useful addition to facilitate the management of seagrass in Milford Haven and Wales more generally and ensure management measures are successful.

Recent survey work in 2019 has highlighted that seagrass extent has expanded from previous extents and is now shown to extend beyond the areas covered by the existing voluntary no-anchor zones. It should be investigated whether updating existing no-anchor zones could be considered to protect all relevant seagrass habitat exposed to damage, in consultation with relevant stakeholders. The no-anchor zone at Angle Point is currently small consisting of discrete areas and is currently not well publicised to recreational boat users as it is considered that use is low or absent from this area. Liaison with users to conduct a more focussed study on the intensity of anchoring and mooring in this area and update the accuracy of the seagrass mapping in this location to inform further management would be beneficial. This could include updating the existing no-anchor zone or further promotion of the zone through relevant channels. The option of installing a visitor mooring in this location should also be discussed with users.

Installation of well placed visitor moorings in areas where anchoring is likely to occur can eliminate or certainly significantly minimise anchoring damage. In the future, the potential for Advanced Mooring Systems (AMS) (rather than traditional moorings) could be considered for these visitor moorings, when the technology is proven to be effective for highly tidal sites like Milford Haven, further reducing the impacts of mooring close to areas of seagrass.

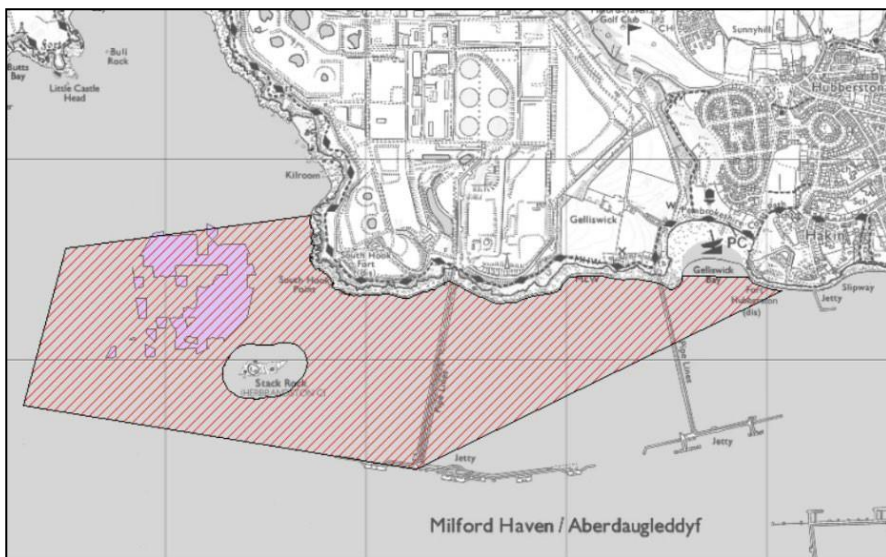
Promotion and awareness raising of sensitive habitat zones within the waterway and the locations of all existing no-anchor zones should be undertaken at all suitable

opportunities. Continual mapping of seagrass in Wales is also important in order to appropriately protect the habitat.

## 4.2 Maerl

In Wales this habitat is only found within Milford Haven and the majority of the overlap with boating activities has been shown to be from anchoring activity. On closer inspection and discussion with NRW staff, it appears that there is very little recreational anchoring in this area and the anchoring in this area is largely tankers and other commercial shipping, which has been monitored by NRW since 2013. The area of anchoring by these vessels is slightly to the west of the maerl bed so overlap with the maerl is rare. It should be noted that the western edge of the maerl bed is largely dead maerl.

The area of maerl lies within the Gelliswick to Lindsay Bay Sensitive habitat zone, a voluntary 'no anchor' zone which was established by the SAC RAG and Milford Haven Port Authority in 2014 to protect maerl and seagrass (see Figure 8).



**Figure 8.** Voluntary no-anchor zone in Milford Haven (red hatch) established by the Pembrokeshire SAC RAG and Milford Haven Port Authority to protect maerl and seagrass. The area of maerl that overlaps with the main area identified for anchoring is shown in pink in this Figure.

## Recommendations:

It is not considered that further site investigation is a priority at this site as the intensity of recreational boating in this area is considered to be low and its impact not as detrimental as other impacts on the maerl bed. However, the level of recreational anchoring on the maerl bed is unknown and a collation of this data may be useful to allow further investigation. The current voluntary 'no-anchor zone' is already in place to protect maerl at this site. Further work could be undertaken to ensure that the voluntary no-anchor zones continue to be well publicised and adhered to by users of the area. If the voluntary zones are proving ineffective, it could be considered, in liaison with users, whether the voluntary zone in this location and others in Milford Haven could in the

future become statutory, to ensure greater long term protection to the habitats. At the present time there are no plans to implement this.

## 4.3 Mudflats and Sandflats

The majority of the overlaps with anchoring, mooring and launching in this analysis is with this habitat. Due to the diverse nature of mudflats and sandflats and the numerous sites where overlaps occur with all three activities, it would not be feasible to follow all up all instances of potential conflict, especially where the overlap is small and it is the only feature present that is impacted by the activity at the site. The only biotope (specific mud habitat) which MarLIN sensitivity work<sup>4</sup> notes as Highly sensitive to Abrasion / penetration of the substratum is **LS.LSa.MuSa.LimAre** – *Limecola bathica* and *Arenicola marina* in littoral muddy sand.

The locations where this biotope occurs as part of the mud and sandflat feature potentially affected by the three activities are listed below. Those with a \* denotes where the intensity of the activity is either High or Medium;

### Anchoring

- Menai Strait (Lleiniog, Menai Bridge, Tal y Foel and Abermenai Point)\*
- Barmouth
- Sandy Haven (Milford Haven) – Potentially large area\*

### Mooring

- Menai Strait (Abermenai Point, Menai Bridge and Porth Penmon and Lleiniog) – Large areas potentially affected\*
- PorthDinllaen\* - Note work already ongoing at this location
- Borth y Guest (Glaslyn-Dywrdd)\*
- Portmeirion
- Barmouth – potentially large area\*
- Dyfi – potentially large area
- Sandy Haven (Milford Haven)\*
- Gwendraeth (Camarthen Bay Holiday Centre)
- Laugharne (River Taff)

### Launching

- Menai Strait (Fryars Road and Lleiniog)
- Cardiff (Penarth)

Additional areas which had **significant areas** of Mudflats and Sandflats habitat (of all mud and sandflat biotopes) potentially affected by these activities are;

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<sup>4</sup> [https://www.marlin.ac.uk/sensitivity/sensitivity\\_rationale](https://www.marlin.ac.uk/sensitivity/sensitivity_rationale)

- Black Rock Sands (launching, plus additional cars on the beach)
- Albion Sands / Gateholm Island\*
- Milford Haven (Dale, Llanstadwell/Neyland, Brunel Quay, Burton Cliff, Llamgwn Pill, Hook (Western Cleddau), Landshipping, Lawrenny, Pembroke River, Angle Bay)\*
- Tenby
- Saundersfoot
- Tywi
- Severn Estuary (off Cardiff) (Anchoring \*)

## Recommendations:

The above analysis suggests areas where further work could occur. When considering the list above with regard to the potential intensity of the activity, the size of the area affected and whether management is currently ongoing, the primary areas are;

- Menai Strait (Abermenai Point, Menai Bridge and Porth Penmon and Lleiniog)
- Borth y Guest
- Barmouth (Mawddach)
- Dyfi
- Albion Sands / Gateholm Island
- Milford Haven (Dale, Sandy Haven, Llanstadwell/Neyland, Brunel Quay, Burton Cliff, Llamgwn Pill, Hook (Western Cleddau), Landshipping, Lawrenny, Pembroke River, Angle Bay)
- Severn Estuary (off Cardiff)

Initially, studies would need to be carried out to investigate whether activities are impacting these biotopes. It is more likely that any potential management would be able to be achieved on an area affected by moorings, where in principal work could be undertaken with mooring owners to investigate measures to reduce impacts on this feature. However, it is unlikely that substantial management measures would be implemented to manage activities of anchoring, mooring and launching on this widespread habitat unless specific evidence of its sensitivity could be given.

## 4.4 Reefs

Similarly with mud and sandflats, there are many overlaps of anchoring, mooring and launching with reef. 'Reefs' comprise a range of biotopes, ranging from those that are rocky, to biogenic habitats (e.g. *Sabellaria*, blue mussels) and mixed habitats.

The biotopes that constituted 'reef' that overlapped with these activities were investigated to ensure that focus was given to the most important areas. The tables in Appendix 4 show the reef biotopes that overlapped with potential anchoring, mooring and launching.

The MarLIN sensitivity work highlighted the following 7 biotopes, classed as components of reef, as Highly sensitive to the pressures of Abrasion/disturbance of the substrate on the surface of the seabed and Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion. Of these, some are upper shore biotopes unlikely to be directly affected by anchoring, mooring and launching and some are already being considered in this exercise in their own right under different habitat name, see below.

**Table 4.** Reef biotopes and how they are being considered in this work

<b>Biotope</b>	<b>How biotope is being considered in this report</b>
LR.FLR.Lic.YG LR.HLR.MusB.Cht LR.HLR.MusB.Cht.Lpg	Upper shore biotopes, unlikely to commonly be affected by anchoring / mooring and may be picked up by polygons which are overly large
LR.LLR.F.Asc.X LR.LLR.F.Asc.FS LR.LLR.FVS.AscVS LR.LLR.FVS.Asc	Sensitive <i>Ascophyllum</i> / egg wrack biotope
LR.MLR.BF.Fser.Pid	Peat and clay exposures

The locations where anchoring, mooring and launching overlapped with *Sabellaria* were investigated, as, although not noted as a Highly sensitive biotope to abrasion and penetration, *Sabellaria alveolata* is a Section 7 habitat of Principal Importance in Wales. Locations where there was overlap between these activities and *Sabellaria* were;

- Aberporth (small overlap) - Anchoring / Mooring
- Criccieth (small overlap) – Anchoring
- Port Eynon Bay, Gower (small overlap) – Anchoring
- Pwlldu Bay, Gower (small overlap) - Anchoring
- Off Cardiff (overlap with recreational fishing vessel anchoring / point records)

It should be noted that the Reef layer was updated in 2018 and therefore some new areas of definite subtidal reef have subsequently been added, especially around St Brides Bay. It does not appear that these new areas overlap with many areas of anchoring and mooring.

## Recommendations:

Similarly with mudflats and sandflats, due to the large areas of potential overlaps with 'reef' habitat, it would not be useful or practical to follow up all occurrences.

The most practical approach to prioritising areas of reef affected may be based on the area of the habitat potentially affected. Locations identified as having potentially large / medium overlaps with these activities include;

- Menai Strait



- South Llŷn / Hells Mouth / Tudwells
- Aberdyfi
- Ramsay / St Davids
- Skomer
- Albion Sands / Gateholm Island
- Milford Haven (Dale, Great Castle Head to Kilgroom, long stretches of Daugleddau, Angle Bay)

Many of these locations also have Fragile sponge and anthozoan habitats also present, particularly around Bardsey and Skomer islands, although it is not clear whether anchoring occurs specifically on these habitats.

However, many of the biotope components of 'reef' will have low sensitivity to anchoring, mooring and launching and no further action is likely to be taken where overlaps are shown.

## 4.5 *Ostrea edulis*

This habitat is only found within Milford Haven and has been recorded at a limited number of sites. It is not considered that recreational activity is currently having a significant effect on this species in Milford Haven. There may be instances where oysters are located in areas of moorings and may actually have been afforded some protection from commercial fishing in the past.

### Recommendations:

There are no recommendations for further follow up for this habitat

## 4.6 Peat and Clay exposures

The analysis has shown that there are a limited number of locations where anchoring, mooring and launching are shown to potentially overlap with this habitat. Regions where both anchoring and mooring occur in the same area are the Menai Strait and Mumbles (Gower). In both these locations it is considered that there is a low likelihood of damage to peat and clay exposures as the area available to boats to anchor is large relative to the size of the habitat, however it is possible that conflict could occur.

Other locations where anchoring and mooring may overlap with peat and clay is Holy Island, Anglesey (Trearddur Bay and Borth Wen). There is considered to be a higher likelihood of predicted overlap of these activities in this location as the area for anchoring and mooring is more restricted, however, a site visit and up to date information regarding the location and extent of this habitat would be beneficial.

In the case of the Gwendraeth (off the Camarthen Bay Holiday Centre), mapping shows this to be potentially the most likely area to be impacted, and the notes from the Phase 1 intertidal survey indicate areas of exposed peat bedrock and a clay bank with boat moorings. Due to the time elapsed from the Phase 1 Intertidal survey, up to date information would need to be sought to evaluate the extent of the habitat any damage occurring.

## Recommendations:

Of the sites identified as having potential overlaps, Trearddur Bay, Borthwen and Gwendraeth would appear to be priority sites for follow up visits as they appear to be the most likely sites to be affected. This would be to assess the current extent of the feature at the sites and any damage to the habitat from these activities.

## 4.7 Atlantic Salt Meadow

A detailed consideration of the mapping indicated that many of the potential conflicts identified with Atlantic salt meadow may be a result of mapping errors. In many cases, the area mapped as salt meadow had shifted slightly (see Figure 9) and in some cases the activity was no longer directly in contact with this habitat. Aerial photography for some areas may also be out of date, so without a site visit few firm conclusions can be drawn regarding the analysis.



**Figure 9.** Examples of how Atlantic salt meadow (turquoise boundary) is mapped at a larger extent than it is now present on the ground. Gwendraeth (Camarthen Bay Holiday Park). Blue hatch is identified mooring area (boat visible).

Consultation with NRW marine staff in Pembrokeshire and NRW Coastal Habitats Specialists did not highlight any known evidence of damage to the habitat already under investigation and considered damage to the feature from anchoring, mooring and launching is likely to be minimal and small scale in nature.

The majority of the overlaps occurred with mooring and the most significant areas in Wales where potential impacts on Atlantic Salt Meadow were;

- Milford Haven (anchoring in Cosheston Pill and a small area in Landshipping Quay (Low intensity) and mooring (Angle Bay, Sandy Haven, Castle Rocks, Llangwm Pill and Western Cleddau)
- River Dee (Mostyn Docks)
- Llandwrog (Artro)
- Mawddach
- Laugharne
- Afon Tywi
- Loughor

- Gwendraeth (Camarthen Bay Holiday Park)
- Newport

The overlaps at three of these sites are shown in Figure 10 along with potential overlaps with *Salicornia* at the same sites.

It was noted through the mapping exercise that there were abandoned boats lying on saltmarsh habitats in some areas, especially in Milford Haven. A NRW project begun in 2020 to investigate the removal of these boats in Milford Haven, as it has been identified that they are potentially causing damage to the Annex 1 habitat from their footprint.

Work by Boorman, (2003), on UK saltmarshes notes that moorings laid in saltmarsh creeks can result in physical damage to the adjacent marsh from boats swinging into the marsh at high tide. Griffiths *et al.*, 2017 reviewed impacts of anchoring and mooring on MPAs. They did not include saltmarsh in their assessment on the basis that this habitat would only be inundated by the tide for short periods only and were likely to be unsuitable for anchoring and mooring. It was noted that indirect effects to habitats such as from access to vessels across habitat may still pose a risk.

## Recommendations:

It is considered that this habitat is not at significant risk from anchoring, mooring and launching. However, of the sites identified where potential conflict could occur, the following would be a priority for site visits due to the size of the overlap and / or presence of other features, particularly *Salicornia*:

- Milford Haven (anchoring in Cosheston Pill and a small area in Landshipping Quay (Low intensity) and mooring (Angle Bay, Sandy Haven, Castle Rocks, Llangwm Pill and Western Cleddau)
- Llandanwg (Arthro)
- Mawddach
- Laugharne
- Afon Tywi
- Gwendraeth (Camarthen Bay Holiday Park)
- River Loughor

## 4.8 *Salicornia* and other annuals

There are four locations where *Salicornia* has been shown to be overlap with anchoring, mooring and launching. They are;

- Dee (Mostyn Docks harbour (mooring and launching) and IRB/lifeboat station Flint (launching)
- Mawddach (anchoring and mooring)
- Llandanwg (Arthro) (mooring)
- River Loughor (Pen Clawdd) (mooring)

Three of these locations are shown on the maps below.



**Figure 10.** Maps showing potential overlaps of *Salicornia* (blue) and Atlantic salt meadow (pink) in a. Mawddach b. Llandanwg (Artro) and River Loughor (Pen Clawdd). Blue hatch shows mooring areas.

## Recommendations:

Locations for any further investigations based on the size of the potential overlap with

*Salicornia* would be;

- Mawddach
- Llandanwg (Artro)
- River Loughor (Pen Clawdd)

## 4.9 Egg wrack on variable salinity rock

This habitat / biotope was selected for inclusion in this exercise as it is sensitive to the pressures of abrasion and penetration of the substratum. However, the instances where this habitat overlaps with these habitats is often when anchoring, mooring or launching polygons overlap with hard structures (such as quay walls). This gives a false sense of overlap as the activity of anchoring, mooring and launching will not actually come into contact with the habitat. See Figure 11.



**Figure 11.** Solva, Pembrokeshire. Egg wrack attached to the slipway and is unlikely to be impacted by the activity of launching.

Sites where it appeared that this habitat was more likely to be genuinely impacted by activities are:

- Barmouth (Aberamffra)
- Opposite Lawrenny Quay, Milford Haven
- Castle Pill (Milford Haven) (shown in Figure 12)
- Solva (Pembrokeshire)



**Figure 12.** Castle Pill, Milford Haven. Egg wrack (light purple strip) is likely to be impacted by boat activity when boats are pulled up and launched over this habitat.

### **Recommendations:**

It is not considered a priority to further investigate the areas of anchoring, mooring and launching that overlap with egg wrack. This is principally due to the small areas of the habitat likely to be affected and the uncertainty around the likely impacts of these activities on this habitat.

## **4.10 Fragile sponge and anthozoan communities on subtidal rocky habitats**

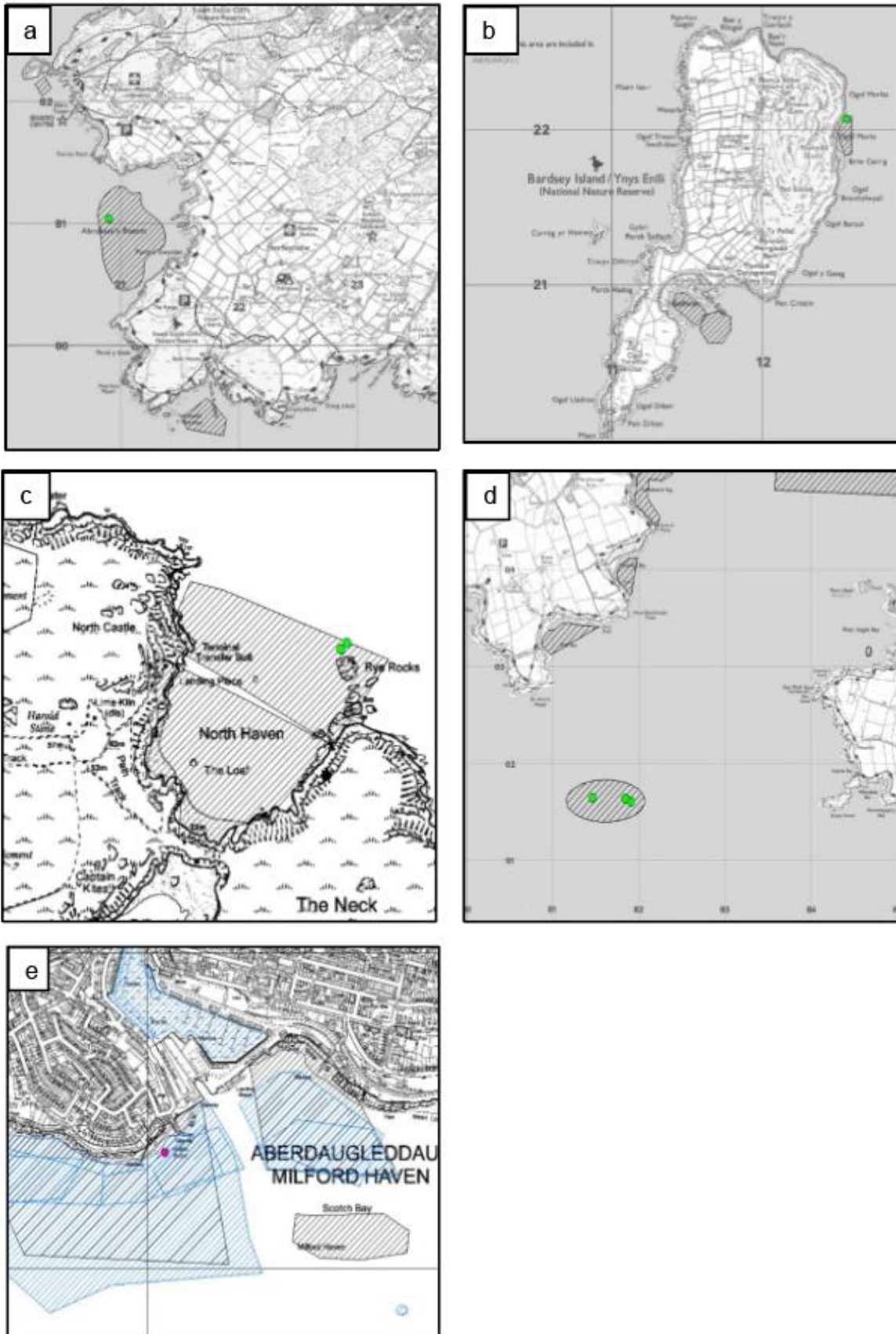
Areas where this habitat is shown to overlap with anchoring, mooring and launching are not common in Wales. When overlaps occur, it is principally in areas of anchoring. Figure 13 shows the five areas identified in Wales. They are:

- Holy Island Anglesey, near South Stack
- Bardsey (Llyn)
- Skomer
- Mouth of Milford Haven (anchoring for fishing boats noted)
- Hakin Point (off Milford Haven)

Evidence available shows that bottom gear deployed from vessels, physical damage by divers and entanglement with line all have the potential to damage this habitat. Erect and branching components of the habitat are most likely to be damaged. Tillin *et al.*, (2010)

considered fragile sponge and anthozoan communities on subtidal rocky habitats to have a high sensitivity to surface abrasion (not specific to surface abrasion from potting).

All of the areas of anchoring and mooring which overlap with this habitat were either Medium or High intensity.



**Figure 13.** Locations in Wales where Fragile Sponge and anthozoan habitat (green / pink dot) overlap with anchoring zones (black hatching) and mooring (blue hatching). A. Holy Island Anglesey, near South Stack, B. Bardsey (Llyn), C. Skomer, D. Mouth of Milford Haven (anchoring for fishing boats noted), E. Hakin Point (off Milford Haven)



## Recommendations:

For some of the areas, the fragile sponge and anthozoan habitat lies on the edge of the mapped anchoring area, so further investigation would be required to verify whether anchoring does actually take place in that area. It should be noted that certain key areas in Wales (west Anglesey, west Llyn and Bardsey, Strumble Head to Abereddy, St Davids and Ramsay and Skomer / Skokholm / St Ann's Head) have concentrations of this habitat and there is likely to be further anchoring on this habitat which is not been picked up in this analysis.

## 5. Summary

In summary, the areas in Table 5 would be the priority for further investigation with the features affected listed. Investigations would be needed to verify the level of anchoring, mooring and launching activity taking place, the presence of the habitat and any evidence that the habitat is being impacted by the recreational boating activities.

**Table 5.** Summary of priority locations for further investigation, showing the habitats that are potentially impacted.

Location	Habitat potentially impacted
Trearddur Bay, west Anglesey	Seagrass, Peat and Clay
Borthwen, west Anglesey	Seagrass, Peat and Clay
Cymyran Strait, west Anglesey	Seagrass
Warren, Abersoch (south Llyn)	Seagrass
Pen y chain (south Llyn)	Seagrass
Criccieth (south Llyn)	Seagrass
Menai Strait (Abermenai Point, Menai Bridge and Porth Penmon and Lleiniog)	Mudflats and Sandflats, Reef, Peat and Clay
Barmouth / Mawddach	Mudflats and Sandflats, Atlantic SaltMeadow, <i>Salicornia</i>
Dyfi	Mudflats and Sandflats
Albion Sands / Gateholm Island	Mudflats and Sandflats, Reef
Milford Haven, including:  Dale, Sandy Haven, Llanstadwell/Neyland, Brunel Quay, Burton Cliff, Llamgwn Pill, Hook (Western Cleddau), Landshipping, Lawrenny, Pembroke River, Angle Bay  Dale, Great Castle Head to Kilgroom, long stretches of Daugleddau, Angle Bay  Anchoring in Cosheston Pill and a small area in Landshipping Quay (Low intensity) and mooring (Angle Bay, Sandy Haven, Castle Rocks, Llangwm Pill and Western Cleddau)	Mudflats and Sandflats  Reef  Atlantic Salt Meadow
Severn Estuary (off Cardiff)	Mudflats and Sandflats, <i>Sabellaria</i>
South Llyn / Hells Mouth / Tudwells	Reef

Location	Habitat potentially impacted
Aberdyfi	Reef
Skomer	Reef, Fragile sponge and anthozoan
Ramsay / St Davids	Reef
Mumbles (Gower)	Peat and Clay
Gwendraeth (Camarthen Bay Holiday Park)	Peat and Clay, Atlantic Salt Meadow
Llandanwg (Artro)	Atlantic Salt Meadow, <i>Salicornia</i>
Laugharne	Atlantic Salt Meadow
Afon Tywi	Atlantic Salt Meadow
River Loughor	Atlantic Salt Meadow, <i>Salicornia</i>
Holy Island Anglesey, near South Stack	Fragile sponge and anthozoan
Bardsey (Llyn)	Reef, Fragile sponge and anthozoan
Mouth of Milford Haven (anchoring for fishing boats noted)	Fragile sponge and anthozoan
Hakin Point (off Milford Haven town)	Fragile sponge and anthozoan

## 5.1 Limitations

The mapping and analysis process has shown itself to be a suitable tool to identify sites where potential conflicts may occur with anchoring, mooring and launching and sensitive habitats. This has been demonstrated by examples where a conflict has been identified through analysis at a site where an existing need for management is already recognised and management is in place (e.g. Porthdinllaen, Longoar Bay). However, with any analysis, there will be limitations to the accuracy and thus the outputs presented. The main limitations identified are:

### 5.1.1 The spatial extents of the activity data and habitat data not being accurate

The activity data was collected and synthesised by APEM (under contract) from a number of sources and is available as separate GIS layers. It is clear that the polygons, while useful in identifying general areas for anchoring and mooring, are not always accurate and the extent of the activity can be overrepresented in some cases. Also, the confidence of some layers is low. Stakeholders were consulted to improve the accuracy of the layers where possible, however, it is acknowledged that not all relevant people were contacted as part of this work. There could be further locations where activity occurs and modifications to the boundaries are likely if further people were consulted and ground truthing carried out.

The habitat data used for this analysis is the most recent data available to NRW. However, as has been demonstrated, its accuracy and coverage is variable and changes in habitat extents may alter the findings of this work.

### 5.1.2 The measure of intensity may not be accurate and representative of the intensity of the activity in the area

The scales used to determine both the 'intensity' values of the activity data have limitations. The scale of intensity based on people's opinion may be affected by different

interpretations of the scales and also have varying levels of knowledge of the sites. The intensity of anchoring and mooring using AIS data is based on a predicted value from proximity to busy areas. Therefore the 'intensity' value should not be used on its own to prioritise any further work and has therefore only had a relatively low weight when discussing the findings of this analysis.

The timescale over which activity data collection occurs is also an important factor to consider. The 'intensity' scale does attempt to capture whether the activity occurs on every tide or sporadically. Further information on the frequency and seasonality of collection (e.g. every spring tide, every tide, occasionally, only in summer etc.) would be useful for prioritisation of future work.

### **5.1.3 Habitats included in the analysis**

The list of sensitive habitats and biotopes used for this analysis was broad but it is possible not all habitats identified as sensitive to the pressures of abrasion and penetration of the substratum were relevant to the activities of anchoring, mooring and launching were included. It is also possible that use of the two pressures Abrasion and Penetration of the substratum were not the only pressures which were relevant to the activities of anchoring, mooring and launching which may have omitted some other habitats from the analysis.

## **5.2 Potential Further Work**

This report has identified key locations where sensitive habitats may interact with anchoring, mooring or launching activity and has attempted to highlight those areas that would be a higher priority to further investigate.

More detailed investigation of the areas with potential overlap, including site visits and surveys (including diving surveys), consultation with area staff, harbour masters, stakeholders and users should be undertaken to build up a more complete picture of the nature and extent of any conflicts. Further survey of the location and extent of protected habitats is also important to ensure that we have the most up to date evidence base.

If an impact is recorded at a site as a result of further investigation, management action is likely to be dependent on the activity in question. If mooring is the main problem, discussions could be instigated with the mooring owners and potentially the mooring could be moved further away to avoid the sensitive habitat or potentially different mooring types (Advanced Mooring Systems) could be investigated.

If anchoring is the main contributing factor to damage, a different approach is likely to be required. Depending on the location and the relevant management authority / land owner, areas could be restricted to anchoring and / or visitor moorings could be installed to direct people away from sensitive areas. Information could be disseminated in local yachting associations and clubs.

With regard to seagrass, much work has been ongoing in the UK and Wales to better manage the impacts on this habitat from anchoring and mooring. Current work is ongoing in Porthdinllaen to trial Advanced Mooring Systems (AMS) and manage the impacts on the area through stakeholder liaison and changes to the type and position of moorings. Voluntary no-anchor zones are already in place in Skomer (North Haven), and three sites in Milford Haven (Longoar Bay, Hook – Milford Haven and Angle Bay

Point and Ellen's Well) to protect maerl and / or seagrass. These have generally proved to be successful and are considered to be an effective, relatively low cost management intervention, although their effectiveness may depend on the level of 'enforcement' available, which could be considered for other parts of Wales. Development of these voluntary zones into statutory zones is currently not the desired route, although if compliance with zones is low and enforcement capacity becomes limited, then further discussion regarding statutory measures may be required, informed by liaison with users.

## 6. References

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- Davies, J., Wray, B. & Brazier, D.P. 2017. Intertidal SAC monitoring of *Zostera marina* at Porth Dinllaen, Pen Llŷn a'r Sarnau SAC, 2016. Pp 51 + xii. Natural Resources Wales Evidence Report No. 064, Bangor.
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# Appendices

## Appendix 1: Habitats Highly sensitive to anchoring, mooring and launching

The following table shows the Section 7 and OSPAR habitats (or component habitats and biotopes) which were *Highly Sensitive* to the two pressures given below which were considered to be relevant to anchoring, mooring and launching. This process was carried out using an extract from the MarLIN database (Feb 2017) which was the output of the sensitivity work.

### Pressures

- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
- Abrasion/disturbance of the substrate on the surface of the seabed

It also shows the Annex 1 habitats which were initially considered in this work, before the scoping was undertaken.

Section 7 / OSPAR habitat	Notes on habitat or biotope
Tide swept channels	'A1.151 - <i>Ascophyllum nodosum</i> , sponges and ascidians on tide-swept mid eulittoral rock' is the biotope which is highly sensitive in this general habitat in Wales
Estuarine Rock	This biotope A1.324 - <i>Ascophyllum nodosum</i> and <i>Fucus vesiculosus</i> on variable salinity mid eulittoral rock (1997 code LR.SLR.Asc.VS) is highly sensitive.
Maerl beds	All biotopes
<i>Modiolus</i> beds	All biotopes
Oyster ( <i>Ostrea edulis</i> beds)	A5.435 - <i>Ostrea edulis</i> beds on shallow sublittoral muddy mixed sediment is the sensitive biotope.
Seagrass beds	All biotopes
Sea-pen and burrowing megafauna communities	The only representative biotope is A5.361 - Seapens and burrowing megafauna in circalittoral fine mud. Therefore the OSPAR habitat 'Sea-pen and burrowing megafauna communities' (instead of the Section 7 habitat Deep Mud) was used
Maritime cliffs and slopes	This habitat was not included as it is above mean high water
Peat and clay exposures	All biotopes
Intertidal mudflats	Only one biotope A2.241 LS.LSa.MuSa.MacAre - <i>Macoma balthica</i> and <i>Arenicola marina</i> in littoral muddy sand came out as highly sensitive. This biotope is very widespread in Wales.
Saline lagoons	N/A
Fragile sponge and anthozoan communities on subtidal rocky habitats	All biotopes

Annex 1 habitats	Notes on habitat or biotope
Reef	<p>The following reef biotopes were highly sensitive to abrasion and penetration:</p> <ul style="list-style-type: none"> <li>• LR.FLR.Lic.YG</li> <li>• LR.HLR.MusB.Cht</li> <li>• LR.HLR.MusB.Cht.Lpyg</li> <li>• LR.LLR.F.Asc.X</li> <li>• LR.LLR.F.Asc.FS</li> <li>• LR.LLR.FVS.AscVS</li> <li>• LR.MLR.BF.Fser.Pid</li> </ul> <p>All impacts on mudflat of importance in SACs.</p>
Large shallow inlets and bays	N/A
Estuaries	N/A
Mudflats and sandflats not covered by seawater at low tide	Only one biotope A2.241 LS.LSa.MuSa.MacAre - <i>Macoma balthica</i> and <i>Arenicola marina</i> in littoral muddy sand came out as highly sensitive.
Coastal lagoons	N/A
Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> )	All instances of this habitat considered
<i>Salicornia</i> and other annuals colonising mud and sand	All instances of this habitat considered

## Appendix 2. Location of GIS layers used to carry out the analysis (internal to NRW)

Habitat	Location of layer	Last edit
Maerl	X drive Section 7 Habitats (NRWGDBBIO.GISDATA.NERC_OSPAR_TOTALMAERL_WGS84_POLYGON)	2013
Seagrass beds	X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_SEAGRASS_WGS84_POINT, NRWGDBBIO.GISDATA.NERC_OSPAR_SEAGRASS_POLYGON_V2 (also the seagrass layer which was updated 2020 was used) NRWGDBBIO.GISDATA.SEAGRASS_POLY_2020	2015
Mudflats and sandflats	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016
Reefs	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016
<i>Ostrea edulis</i>	X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_OYSTER_BEDS_WGS84_POINT, X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_OYSTER_BEDS_POLYGON	2014 2010
Horse mussel beds	X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_HORSE_MUSSEL_WGS84_POLYGON	2014
Seapens and burrowing megafauna	X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_SEAPENS_AND_BURROWING_MEGAFUNA_WGS84_POINT (note there is a 2020 update now available)	2015
Coastal lagoons	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016
Estuaries	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016
Large shallow inlets and bays	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016



Habitat	Location of layer	Last edit
Atlantic salt meadows	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016
Peat and Clay exposures	X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_PEAT_CLAY_EXP_POINT_V2, X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_PEAT_CLAY_EXPOSURES_WGS84_POINT, X drive Section 7 Habitats NRWGDBBIO.GISDATA.NERC_OSPAR_PEAT_CLAY_EXP_POLYGON_V2	2014
<i>Salicornia</i> and other annuals	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016
Egg wrack on variable salinity rock (sensitive biotopes)	Intertidal Phase 1 map on X drive (NRWGDBBIO.GISDATA.PHASE1_INTERTIDAL_BIOTOPE_MAP)	2010?
Estuaries	Y:\Marine\Marine_Subtidal\SAC_Update_2016\SACUpdate2016.gdb\SAC_Features_Updated_2016_OSGB36\SAC_Features_Updated_2016_OSGB36	2016
Fragile sponge and anthozoan communities on subtidal rocky habitats	X drive Section 7 Habitats NRWGDBBIO.GISDATA.SPONGE_ANTHOZOAN_2020	2020

## Appendix 3: Locations of overlap with anchoring, mooring and launching in Wales (listed from north to south Wales)

Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Flint (IRB slipway)	Mudflats and sandflats, Atlantic salt meadow	Launching	Dee SAC	Low	Small
Bagillt (Dee) 3 areas	Atlantic salt meadow, Mudflats and sandflats	Mooring, launching	Dee SAC	Low	Small
Holywell	Mudflats and sandflats	Mooring and launching	Dee SAC	Low	Small - Med
Mostyn (Dee)	Mudflats and sandflats, Salicornia	Mooring and launching	Dee SAC	Low	Small - Med
Prestatyn	Mudflats and sandflats	Mooring	No	Low	Small
Llandudno pier	Reefs	Anchoring	No	Low	Small
Llanfairfechan	Mudflats and sandflats	Launching	MSCB	Med	Small
Menai Strait (full length)	Mudflats and sandflats, reefs, Peat and clay	Anchoring, mooring and launching	MSCB	Low - High	Med - large
Moelfre	Reefs	Anchoring, launching	MSCB	Low - Med	Small
Trearddur Bay	Seagrass, Peat and Clay	Anchoring and mooring	North Anglesey Marine (species feature)	Med	Small-Med
Borthwen	Seagrass, Peat and Clay	Anchoring and mooring	No	Med	Small-Med
Cymyran Strait	Seagrass	Mooring	No	Low	Small (note, there may be larger areas affected than mapped)

Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Aberffraw	Mudflats and sandflats, Atlantic salt meadow	Mooring	Anglesey Coast Saltmarsh	Low	Small
Maltraeth	Mudflats and sandflats, Atlantic salt meadow	Anchoring, mooring and launching	Anglesey Coast Saltmarsh	Med	Small-Med
Abermenai Point	Mudflats and sandflats	Anchoring	MSCB	Med	Large
Foryd (South east)	Seagrass	Launching	MSCB	Low? Appears rural	Small
Porthdinllaen (Nefyn)	Seagrass, Mudflats and sandflats, reefs	Anchoring, mooring and launching	PLAS	Med-High	Large
Off Porth Ysgaden	Reefs	Anchoring	PLAS	Med	Small
South Llyn (Hell's mouth and Tudwells)	Reefs	Anchoring	PLAS	Low - Med	Small - Med
Abersoch (Penrhyn du)	Reefs, Egg wrack	Anchoring, Launching	PLAS	Low - Medium	Small
Llanbedrog Bay	Reefs	Anchoring	PLAS	Med	Small
Pen ychain	Seagrass	Mooring	PLAS	Med	Small
Criccieth	Seagrass	Anchoring	PLAS	Low	Med
Black Rock Sands	Mudflats and sandflats	Launching (cars on beach)	PLAS	High?	Large
Porthmadog / Borth y Guest (Glaslyn-Dwryd)	Mudflats and sandflats, Reefs (small)	Mooring	PLAS	Low - Med	Med
Llanbedr (Artro)	Atlantic salt meadow and Salicornia	Mooring	PLAS	Low - Med	Small-Med
Barmouth (Mawddach)	Mudflats and sandflats, Reefs (small), Atlantic salt meadow and Salicornia, eggwrack	Anchoring, Mooring and launching	PLAS	Low - Med	Med - Large

Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Aberdyfi (Dyfi) (and mooring in Afon Leri – Ynys Las)	Mudflats and sandflats, Reefs, Atlantic salt meadow, egg wrack	Anchoring, Mooring and launching	PLAS	Med	Med - Large
New Quay	Reefs	Anchoring	Cardigan Bay	Low	Small
Ynys Lochtan	Reefs	Anchoring	Cardigan Bay	Low	Small
Aberporth	Reefs	Anchoring and mooring	Cardigan Bay	Low	Small
Abereiddi Bay	Mudflats and sandflats and Reefs	Anchoring	Pembrokeshire Marine	Medium	Small-Medium
Porthselsu	Mudflats and sandflats	Anchoring	Pembrokeshire Marine	Medium	Small
Ramsay Island	Mudflats and sandflats, reefs	Anchoring and mooring	Pembrokeshire Marine	Medium	Medium
St Justinians	Reefs	Anchoring, mooring and launching	Pembrokeshire Marine	Medium	Medium
St Davids (sites are Porthlysg, Porth Clais, Caerfai)	Mudflats and sandflats, reefs	Anchoring, Mooring and Launching (Porth Clais)	Pembrokeshire Marine	Low	Small -Med
Solva	Mudflats and sandflats, reefs, egg wrack	Anchoring, Mooring and launching	Pembrokeshire Marine	Medium	Small-Med
Porthmynawyd	Mudflats and sandflats	Anchoring	Pembrokeshire Marine	Low	Small - Med
Nolton Haven	Mudflats and sandflats, reefs	Anchoring	Pembrokeshire Marine	Low	Med
Druidston	Mudflats and sandflats, reefs	Anchoring	Pembrokeshire Marine	Low	Med
Little Haven / Broad Haven	Mudflats and sandflats, reefs	Anchoring	Pembrokeshire Marine	Low	Med
St Brides Cross and Musselwick Sands	Mudflats and sandflats, reefs	Anchoring	Pembrokeshire Marine	Low	Small
Martins Haven	Mudflats and sandflats and reefs	Anchoring	Pembrokeshire Marine, Skomer MCZ	Medium	Small

Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Skomer	Reefs and seagrass	Anchoring	Pembrokeshire Marine, Skomer MCZ	High-Med (note there is a voluntary no-anchor zone in North Haven)	Medium
Albion Sands / Gateholm Island	Mudflats and sandflats and reefs	Anchoring	Pembrokeshire Marine, Skomer MCZ	Medium	Large
Mill Bay	Mudflats and sandflats and reefs	Anchoring	Pembrokeshire Marine	Medium	Small
Watwick Bay and Point	Mudflats and sandflats and reefs	Anchoring	Pembrokeshire Marine	Medium	Medium
Milford Haven: Dale	Reefs, Mudflats and sandflats, Seagrass	Anchoring, mooring and launching	Pembrokeshire Marine	Medium	Large
Milford Haven: Watchpoint house point	Reefs	Anchoring	Pembrokeshire Marine	? Low	Small
Milford Haven: Sandy Haven (great Castle Head to Kilroom)	Reefs, Mudflats and sandflats, Seagrass, Atlantic salt meadow	Anchoring, mooring, launching	Pembrokeshire Marine	Medium?	Large (intensity appears less further up the Pill)
Milford Haven: Little wick (Hook Jetty) – note launching area offset from OS map	Reefs, Mudflats and sandflats,	Launching	Pembrokeshire Marine	Medium?	Small
Milford Haven: Gelliswick	Reefs, Mudflats and sandflats,	Anchoring, mooring	Pembrokeshire Marine	Med-High	Medium
Milford Haven	Reefs, Mudflats and sandflats, Seagrass, Eggwrack	Anchoring, mooring and launching	Pembrokeshire Marine	Med-High	Small-Med

Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Milford Haven: Castle Pill	Egg Wrack	Mooring (some anchoring)	Pembrokeshire Marine	High	Small (thin strips)
Milford Haven: Llanstadwell / Neyland	Reefs, Mudflats and sandflats,	Anchoring, mooring	Pembrokeshire Marine	Med-High	Large (reefs medium)
Milford Haven: Brunel Quay – Burton Ferry (Milford Haven)	Reefs, Mudflats sand sandflats,	Anchoring, mooring and launching	Pembrokeshire Marine	Med-High	Large (reefs medium)
Milford Haven: Burton Cliff	Reefs, Mudflats sand sandflats, Egg wrack, <i>Ostrea edulis</i>	Anchoring, mooring	Pembrokeshire Marine	Medium	Large
Milford Haven: Ferry Hill / Williamston Mountain	Reefs, Mudflats sand sandflats, Egg wrack, <i>Ostrea edulis</i> , Atlantic salt meadow	Anchoring, mooring	Pembrokeshire Marine	Medium	Large
Milford Haven: Castle Reach	Reefs, Mudflats and sandflats,	Anchoring, mooring	Pembrokeshire Marine	Low - Medium	Medium
Milford Haven: Llangwm Pill	Reefs, Mudflats sand sandflats, Atlantic salt meadow	Mooring, some anchoring, launching	Pembrokeshire Marine	Medium	Large
Milford Haven: Knapp Wood	Reefs, Mudflats and sandflats,	Mooring	Pembrokeshire Marine	Low - Medium	Medium
Milford Haven: Hook (Western Cleddau)	Mudflats and sandflats, Atlantic salt meadow	Mooring	Pembrokeshire Marine	Low	Large
Milford Haven: Cunnigar	Mudflats and sandflats, Atlantic salt meadow	Mooring	Pembrokeshire Marine	Low	Small
Milford Haven: Landshipping (join of West and East Cleddau)	Mudflats and sandflats, Reefs, Atlantic salt meadow, egg wrack	Anchoring, mooring	Pembrokeshire Marine	Low	Large
Milford Haven: Lawrenny	Mudflats and sandflats, Reefs, Egg wrack	Mooring	Pembrokeshire Marine	Medium	Large

Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Milford Haven: Creswell Quay	Mudflats and sandflats,	Mooring	Pembrokeshire Marine	Low	Small
Milford Haven: West Williamston	Atlantic salt meadow	Mooring	Pembrokeshire Marine	Low	Small
Milford Haven: Jenkins Point	Reefs, <i>Ostrea edulis</i>	Anchoring, mooring	Pembrokeshire Marine	Medium	Medium
Milford Haven: Mill Bay	Mudflats and sandflats, Egg wrack	Anchoring,	Pembrokeshire Marine	Medium	Small-Med
Milford Haven: Ringley Wells	<i>Ostrea edulis</i>	Mooring	Pembrokeshire Marine	Medium	Medium
Milford Haven: Cosherton Pill	Mudflats and sandflats, Reefs, Atlantic salt meadow, Seagrass, reefs(at mouth)	Anchoring, mooring, launching	Pembrokeshire Marine	Medium	Large
Milford Haven: Hobbs Point to Ferry	Mudflats and sandflats, Reefs	Anchoring, mooring,	Pembrokeshire Marine	Medium	Small-Med
Milford Haven: Pembroke Dockyard	Seagrass	Anchoring, mooring,	Pembrokeshire Marine	Medium (local knowledge suggests low levels of impact)	Med
Milford Haven: Pembroke River	Mudflats and sandflats, Reefs, seagrass, <i>Ostrea edulis</i> (Pennar Point), Egg wrack (small)	Anchoring, mooring,	Pembrokeshire Marine	Low - med (local knowledge suggests may not be heavily used)	Med - Large
Milford Haven: Angle Bay	Mudflats and sandflats, Reefs, seagrass (at IRB slipway outside of Bay), Atlantic salt meadow	Anchoring, mooring, launching	Pembrokeshire Marine	High - Med	Large

Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Milford Haven: Chapel Bay	Reefs	Launching	Pembrokeshire Marine	Low	Small
Milford Haven: Thorn Island	Reefs	Mooring	Pembrokeshire Marine	Medium	Small
Milford Haven: West Angle Bay	Mudflats and sandflats,	Launching	Pembrokeshire Marine	Low	Small
Stackpole Quay	Reefs, Mudflats and sandflats	Anchoring	Pembrokeshire Marine	Low	Medium
Freshwater East	Mudflats and sandflats	Mooring	Pembrokeshire Marine	Low	Small
Priests nose	Mudflats and sandflats	Anchoring	Pembrokeshire Marine	Low	Medium
Tenby	Mudflats and sandflats	Mooring	Carmarthen Bay and Estuaries	Medium	Large
Monkstone Point	Mudflats and sandflats	Anchoring and mooring	Carmarthen Bay and Estuaries	Low	Small-med
Saundersfoot	Mudflats and sandflats	Anchoring	Carmarthen Bay and Estuaries	Low-med	Large
Laugharne (RiverTaf)	Mudflats and sandflats, Atlantic salt meadow	Mooring, launching	Carmarthen Bay and Estuaries	Low	Med-large
North of Llansteffan (Tywi)	Mudflats and sandflats, Atlantic salt meadow	Mooring, launching	Carmarthen Bay and Estuaries	Low-med	Medium
Ferryside (Tywi)	Mudflats and sandflats	Mooring	Carmarthen Bay and Estuaries	Low-med	Medium
Gwendraeth (Camarthen Bay Holiday Centre)	Peat and Clay, mudflats and sandflats	Mooring	Carmarthen Bay and Estuaries	Low	Small-med
Kidwelly	Mudflats and sandflats	Launching	Carmarthen Bay and Estuaries	Low	Small
Burry Port	Egg wrack	Mooring, launching	No	Low	Small
Llanelli breakwater	Mudflats and sandflats	Launching	Carmarthen Bay and Estuaries	Low	Small
Morfa Bacas	Atlantic salt meadow	Launching	Carmarthen Bay and Estuaries	Low	Small
Loughor Bridge	Mudflats and sandflats, Atlantic salt meadow	Mooring	Carmarthen Bay and Estuaries	Medium	Small



Location	Habitat impacted	Overlap with anchoring, mooring or launching?	Within a SAC?	Intensity	Area of overlap (estimated)
Pen Clawdd (Rover Loughor)	Mudflats and sandflats and Atlantic salt meadow, salicornia	Mooring	Carmarthen Bay and Estuaries	Low	Med
Porth Eynon Bay	Peat and Clay	Anchoring	No	Med	Small - Med
Mumbles	Peat and Clay	Anchoring	No	Med	Small - Med
Penarth	Mudflats and sandflats	Launching, anchoring, mooring	Severn Estuary	Low - High	Small - Med
Afon Rhymini	Atlantic salt meadow	Mooring	No	Low	Med
Severn Estuary (off Cardiff)	Mudflats and sandflats	Anchoring	Severn Estuary	Med	Large, charter fishing boats mentioned
River Usk Ebwy	Mudflats and sandflats and Atlantic salt meadow	Mooring	Severn Estuary	Unknown	Med
River Usk (cold harbour reach)	Peat and Clay	Mooring	No	Low	Small
Gold cliff	Mudflats and sandflats	Launching	Severn Estuary	Low	Small
Red cliff	Atlantic salt meadow	Launching	Severn Estuary	Med	Small

The following sites have a small overlap and from consulting the map is likely not to be a priority for further investigation, due to the size of habitats affected and the habitat type in question:

- Flint (IRB slipway)
- Bagillt (Dee) 3areas
- Prestatyn
- Llandudno pier
- Llanfairfechan
- Moelfre
- Pilots Cave, Ynys Llanddwyn
- Off Porth Ysganden
- Abersoch (Penrhyn du)
- Llanbedrog Bay
- New Quay

- Ynys Lochtan
- Aberporth
- Porth selsi
- Porthmynawyd
- St Brides Cross and Musselwick Sands
- Martins Haven
- Mill Bay
- Milford Haven: Dale
- Milford Haven: Watchpoint house point
- Milford Haven: Little wick (Hook Jetty)
- Milford Haven: Creswell Quay
- Milford Haven: West Williamston
- Milford Haven: Chapel Bay
- Milford Haven: Thorn island
- Milford Haven: West Angle Bay
- Freshwater East
- Kidwelly
- Burry Port
- Llanelli breakwater
- Gold cliff
- Red cliff

## Appendix 4: Reef biotopes affected

### Launching – Reef biotopes affected

Biotope code (2004)		
IR.MIR.KR.Ldig.Bo	IR.MIR.KR.Ldig.Ldig	IR.MIR.KR.Ldig.Pid
LR.FLR.Lic.Ver.B (rare)	LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.YG
LR.HLR.FR.Him (rare)	LR.HLR.FR.Osm (rare)	LR.HLR.FT.FserT (rare)
LR.HLR.MusB	LR.HLR.MusB.Cht (rare)	LR.HLR.MusB.MytB (rare)
LR.LLR.F.Asc.FS	LR.LLR.F.Asc.X	LR.LLR.F.Fspi.FS
LR.LLR.F.Fves (rare)	LR.LLR.F.Fves.X	LR.LLR.F.Pel
LR.LLR.FVS.AscVS	LR.LLR.FVS.Fcer	LR.LLR.FVS.FspiVS
LR.LLR.FVS.PelVS	LR.MLR.BF.Fser.Bo	LR.MLR.BF.Fser.R
LR.MLR.BF.FspiB	LR.MLR.BF.FvesB	LR.MLR.BF.PelB
LS.LBR.LMus.Myt.Mx (rare)	N/A	N/A

### Anchoring – Reef biotopes affected

Biotope code (2004)		
IR.HIR.KFaR.Ala.Ldig	IR.HIR.KFaR.LhypFa (rare)	IR.HIR.KSed.Sac (rare)
IR.MIR.KR.Ldig.Bo	IR.MIR.KR.Ldig.Ldig	IR.MIR.KR.Ldig.Pid (rare)
IR.MIR.KR.Lhyp.Ft (rare)	IR.MIR.KT.LdigT	LR.FLR.Eph.Ent
LR.FLR.Lic.Ver.B	LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.YG
LR.HLR.FR.Coff (rare)	LR.HLR.FR.Him	LR.HLR.FR.Mas
LR.HLR.FR.Osm	LR.HLR.FR.Pal (rare)	LR.HLR.FT.FserT
LR.HLR.MusB	LR.HLR.MusB.Cht	LR.HLR.MusB.Cht.Lpyg
LR.HLR.MusB.MytB	LR.HLR.MusB.Sem.FvesR	LR.HLR.MusB.Sem.Sem
LR.LLR.F.Asc.FS	LR.LLR.F.Fserr.X (rare)	LR.LLR.F.Fspi.FS
LR.LLR.F.Fves	LR.LLR.F.Fves.X	LR.LLR.F.Pel
LR.LLR.FVS.AscVS	LR.LLR.FVS.FspiVS	LR.LLR.FVS.PelVS
LR.MLR.BF.Fser.Bo	LR.MLR.BF.Fser.Pid (rare)	LR.MLR.BF.Fser.R
LR.MLR.BF.FspiB	LR.MLR.BF.FvesB	LR.MLR.BF.PelB
LR.MLR.BF.Rho (rare)	LR.MLR.MusF.MytFR	LR.MLR.MusF.MytFves
LS.LBR.LMus.Myt.Mx (rare)	LS.LBR.Sab.Salv (rare)	N/A

## Mooring – Reef biotopes affected

Biotope code (2004)		
IR.HIR.KFaR.Ala.Ldig	IR.HIR.KSed.LsacChoR	IR.HIR.KSed.Sac
IR.HIR.KSed.XKHal	IR.LIR.IFaVS.MytRS	IR.MIR.KR.Ldig.Bo
IR.MIR.KR.Ldig.Ldig	IR.MIR.KR.Ldig.Pid (1 record)	IR.MIR.KT.LdigT
LR.FLR.Eph.EphX	LR.FLR.Lic.Ver.B	LR.FLR.Lic.Ver.Ver
LR.FLR.Lic.YG	LR.HLR.FR.Him	LR.HLR.FR.Mas
LR.HLR.FR.Osm	LR.HLR.FR.Pal (1 record)	LR.HLR.FT.FserT (2 records)
LR.HLR.FT.FserTX (1 record)	LR.HLR.MusB	LR.HLR.MusB.Cht (2 records)
LR.HLR.MusB.Cht.Lpyg (1 record)	LR.HLR.MusB.MytB (2 records)	LR.HLR.MusB.Sem.FvesR
LR.HLR.MusB.Sem.Sem	LR.LLR.F.Asc.FS	LR.LLR.F.Fspi.FS
LR.LLR.F.Fves	LR.LLR.F.Fves.X	LR.LLR.F.Pel
LR.LLR.FVS.AscVS	LR.LLR.FVS.Fcer	LR.LLR.FVS.FserVS
LR.LLR.FVS.FvesVS	LR.LLR.FVS.PelVS	LR.MLR.BF.Fser.Bo
LR.MLR.BF.Fser.Pid (1 record)	LR.MLR.BF.Fser.R	LR.MLR.BF.FspiB
LR.MLR.BF.FvesB	LR.MLR.BF.PelB	LR.MLR.MusF.MytFR (1 record)
LR.MLR.MusF.MytFves	LS.LBR.LMus.Myt.Mx	LS.LBR.Sab.Salv

## Data Archive Appendix

The following GIS layers used and created as part of this analysis are below.

Some of this data may be able to be supplied on request to NRW.

Layer name	Location	Notes
Mooring	X:\Recreation and Access\Anchoring Mooring and Launching	Activity data layer created under contract by APEMand used in this work to overlap with the habitats
Anchoring	X:\Recreation and Access\Anchoring Mooring and Launching	Activity data layer created under contract by APEMand used in this work to overlap with the habitats
Launching	X:\Recreation and Access\Anchoring Mooring and Launching	Activity data layer created under contract by APEMand used in this work to overlap with the habitats
Construction_deposits_removals_sensitive_habitats	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor, Launch\Overlap Sensitive_Hotspots_20191213\Construction_deposits_removals_sensitive_habitats.shp	A layer which encompasses all the habitats sensitive to the MarLIN pressures of abrasion andpenetration. Note the reef only includes definite reef.
Habitats_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	A layer showing all locations where relevant habitats overlap with anchoring areas. Polygon cutto the size of the anchoring layer.
Habitats_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	A layer showing all locations where relevant habitats overlap with mooring areas. Polygon cut tothe size of the mooring layer.
Habitats_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	A layer showing all locations where relevant habitats overlap with anchoring areas. Polygon cutto the size of the launching layer.
Seagrass_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where seagrass overlaps with anchoring
Mudflats_and_sandflats_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap	Show where mudflats and sandflats overlaps with anchoring

Layer name	Location	Notes
	Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	
Reefs_Definite_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where reef overlaps with anchoring. Note the definite reef is a separate layer and the Reg 35 reef layer for the relevant SACs were also used,which gives further areas of potential reef that may be affected.
Atlantic_Salt_Meadow_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where Atlantic salt meadow overlaps with anchoring
Salicornia_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where <i>Salicornia</i> overlaps with anchoring
Ostrea_edulis_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where <i>Ostrea edulis</i> overlaps with anchoring
Peat_and_clay_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where peat and clay overlaps with anchoring
Egg_wrack_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where egg wrack overlaps with anchoring
SpongeAnthozoan_Intersect_Anchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where fragile sponge and anthozoan (layer created in 2020) overlaps with anchoring
Seagrass_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where seagrass overlaps with mooring
Mudflats_and_sandflats_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where mudflats and sandflats overlaps with mooring
Reefs_Definite_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap	Show where reefs overlap with mooring. Note the definite reef is a separate layer and the Reg 35 reef layer

Layer name	Location	Notes
	Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	for the three relevant SACs were also used which gives further areas of potential reef that may be affected.
Atlantic_Salt_Meadow_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where Atlantic salt meadow overlaps with mooring
Salicornia_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where <i>Salicornia</i> overlaps with mooring
Ostrea_edulis_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where <i>Ostrea edulis</i> overlaps with mooring
Peat_and_clay_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where peat and clay overlaps with mooring
Egg_wrack_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where egg wrack overlaps with mooring
SpongeAnthozoan_Intersect_Mooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where fragile sponge and anthozoan (layer created in 2020) overlaps with mooring
Seagrass_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where seagrass overlaps with launching
Mudflats_and_sandflats_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where mudflats and sandflats overlaps with launching
Reefs_Definite_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where reefs overlaps with launching
Atlantic_Salt_Meadow_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap	Show where Atlantic salt meadow overlaps with launching

Layer name	Location	Notes
	Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	
Salicornia_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where <i>Salicornia</i> overlaps with launching
Ostrea_edulis_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where <i>Ostrea edulis</i> overlaps with launching
Peat_and_clay_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where peat and clay overlaps with launching
Egg_wrack_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where egg wrack overlaps with launching
SpongeAnthozoan_Intersect_Launching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where fragile sponge and anthozoan (layer created in 2020) overlaps with launching
MacAre_Intersect_MudandSandflatsAnchoring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where MacAre biotope is found in mudflat and sandflat areas identified as impacted by anchoring
MacAre_Intersect_MudandSandflatsMooring	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where MacAre biotope is found in mudflat and sandflat areas identified as impacted by mooring
MacAre_Intersect_MudandSandflatsLaunching	Y:\Marine\Marine_Subtidal\Non_Licensable_Activites\Anchoring, Moor,Launch\Overlap Sensitive_Hotspots_20191213\Anchoring and mooring.gdb	Show where MacAre biotope is found in mudflat and sandflat areas identified as impacted by launching





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