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CONSERVATION OBJECTIVES AND POTENTIAL MANAGEMENT OPTIONS

Waterfoot

Proposed Marine Conservation Zone (pMCZ)

Subtidal seagrass (*Zostera marina*)




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Summary

This document provides information on the uses and activities occurring within Waterfoot proposed Marine Conservation Zone (pMCZ) and surrounding area. The document has been produced to advise stakeholders about the activities that may cause a threat to the proposed features, the potential management options for these activities and their compatibility with conservation objectives of the feature to be protected.

The information is organised by the type of activity, and briefly describes potential impacts on the feature and management options. The grouping of activities is based on the standardised UK pressures-activity matrix[1] as developed by JNCC, which classes similar activities that exert similar pressures together, for example, anchoring by commercial and recreational vessels. Detailed management plans will be developed post designation based on this document along with the feature vulnerability assessment and the conservation objectives of the pMCZ feature. The management options will only consider those activities assessed as capable of affecting the features of the pMCZ based on the risk of damage assessment.

This document has been based on data, evidence from peer-reviewed scientific journals and stakeholder engagement. Due to the high degree of variability within some habitats, the variety of activities under consideration and local variation, it is inevitable that the document is somewhat generalised. Where possible, the paper will give comprehensive evidence-based guidance as a starting point for discussions about the development of management options to achieve the conservation objectives in the pMCZ.

This document should be read alongside the document Guidance on the development of Conservation Objectives and potential Management Options.

Additional information on Waterfoot pMCZ and proposed features includes:

- Guidance on selection and designation of Marine Conservation Zones (MCZs) in the Northern Ireland Inshore Region
- Justification report for selection of proposed Marine Conservation Zones (pMCZ) features
- Assessment against the Selection Guidelines for Waterfoot proposed Marine Conservation Zone (pMCZ)
- Data Confidence Assessment for Waterfoot proposed Marine Conservation Zone (pMCZ)
- Site Summary Document for Waterfoot proposed Marine Conservation Zone

[1] Refer to Paper for HBDSEG Meeting 9-10 October 2013 – Progress towards the development of a standardised UK pressure-activities matrix http://jncc.defra.gov.uk/pdf/Final_HBDSEG_P-A_Matrix_Paper_28b_Website_edit%5B1%5D.pdf

Glossary of Terms and Acronyms

AFBI - Agri-food and Biosciences Institute

AONB - Area of Outstanding Natural Beauty, designated under the Nature Conservation and Amenity Lands Order (Northern Ireland) 1985

Biotope - the region of habitat associated with a particular ecological community

Circalittoral - describes the zone from a depth where 1% light reaches the seabed down to 200m (JNCC)

Conservation objective - A statement of the desired ecological/geological state (quality) of a feature (habitat, species or geological) for which the MCZ is designated

DARD - Department of Agriculture and Rural Development

DETI - Department of Enterprise, Trade and Investment

DCAL - Department of Culture, Arts and Leisure

DOE - Department of the Environment

DRD - Department for Regional Development

EUNIS - European Nature Information System, is a habitat classification system used throughout Europe and covers all types of natural and artificial habitats, both aquatic and terrestrial

Infralittoral - describes the zone from mean low water down to a depth where 1% of light can reach the seabed (JNCC)

JNCC - Joint Nature Conservation Committee, the statutory nature conservation adviser to the Department and the UK Government in the marine environment

MCAA - Marine and Coastal Access Act 2009

MCA - The Maritime and Coastguard Agency

MCZ - Marine Conservation Zone used to refer to MCZs designated under section 13 of the Marine Act (Northern Ireland) 2013 in the Northern Ireland inshore region and in section 116 of the Marine and Coastal Access Act 2009 in the Northern Ireland offshore region

MPA - As a generic term Marine Protected Areas are a clearly defined geographical space, recognised, dedicated and managed, through legal or other means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. As a specific term it refers to a national designation in Scotland (equivalent to MCZ).

NIEA - Northern Ireland Environment Agency

NIW - Northern Ireland Water

OSPAR - OSPAR is the mechanism by which fifteen Governments of the western coasts and catchments of Europe, together with the European Union, cooperate to protect the marine environment of the North-East Atlantic

OSPAR T&D - OSPAR List of Threatened and/or Declining Species and Habitats

PMF - Priority Marine Feature - collective term for those features (habitats, species and geological/geomorphological features) which are considered to be of conservation importance in the NI inshore region

pMCZ - Proposed Marine Conservation Zone

pMCZ Feature - proposed Marine Conservation Zone Feature(s) that will underpin the MCZ designation

RNLI - Royal National Lifeboat Institution

ROV - Remotely Operated Vehicle

SAC - Special Area of Conservation, designated through the Habitats Directive

SPA - Special Protection Area, designated under the Birds Directive

SSNI - Sublittoral Survey Northern Ireland

VMS - Vessel Monitoring System

Vulnerability Assessment - A feature is vulnerable when it is exposed to a pressure to which it is sensitive. The Vulnerability Assessment is used to assess current pressures, desired conditions and levels of management required

WFD - Water Framework Directive

Introduction

Waterfoot proposed Marine Conservation Zone (pMCZ) is located in a small embayment (within the wider Red Bay area) on the east coast of County Antrim, Northern Ireland, offshore from the village of Waterfoot. It lies inshore of the North Channel. The seabed in the area is comprised mainly of sandy sediments and coarse-gravelly sand.

The pMCZ, located at the inner part of the bay, is a small area of 0.788km^2 (see Figure 1). This area contains a large Subtidal seagrass bed (*Zostera marina*) that may be the largest in Northern Ireland, and is considered to be in good condition.

The waters around the Red Bay area are important for finfish aquaculture (organic Atlantic salmon, *Salmo salar*). Fisheries in the area include scallop dredging and potting for Edible crab (*Cancer pagurus*) and European lobster (*Homarus gammarus*). Although there is no significant industrial activity in Red Bay, the increasing popularity of the area for leisure and recreational activities may be a threat for the sustainability of Subtidal seagrass beds. The area is popular for power boating and associated water-based activities. There are two areas with a mixture of private and commercial swinging moorings. There is also an RYA powerboat training centre in Cushendall and a sailing club. These are adjacent to Cushendall Sailing club and Waterfoot/Red Bay Pier.

Red Bay pier was formally used for the importation of coal and goods as well as the ferry service to Scotland.

Both sporting and nature enthusiasts use the area for recreational fishing, SCUBA diving, kayaking and other activities.

An area to the north of Waterfoot pMCZ has been designated as a Special Area of Conservation (SAC) while the pMCZ lies within the wider Antrim Coast and Glens Area of Outstanding Natural Beauty (AONB).

Further information on the pMCZ can be found in the Site Summary Document.

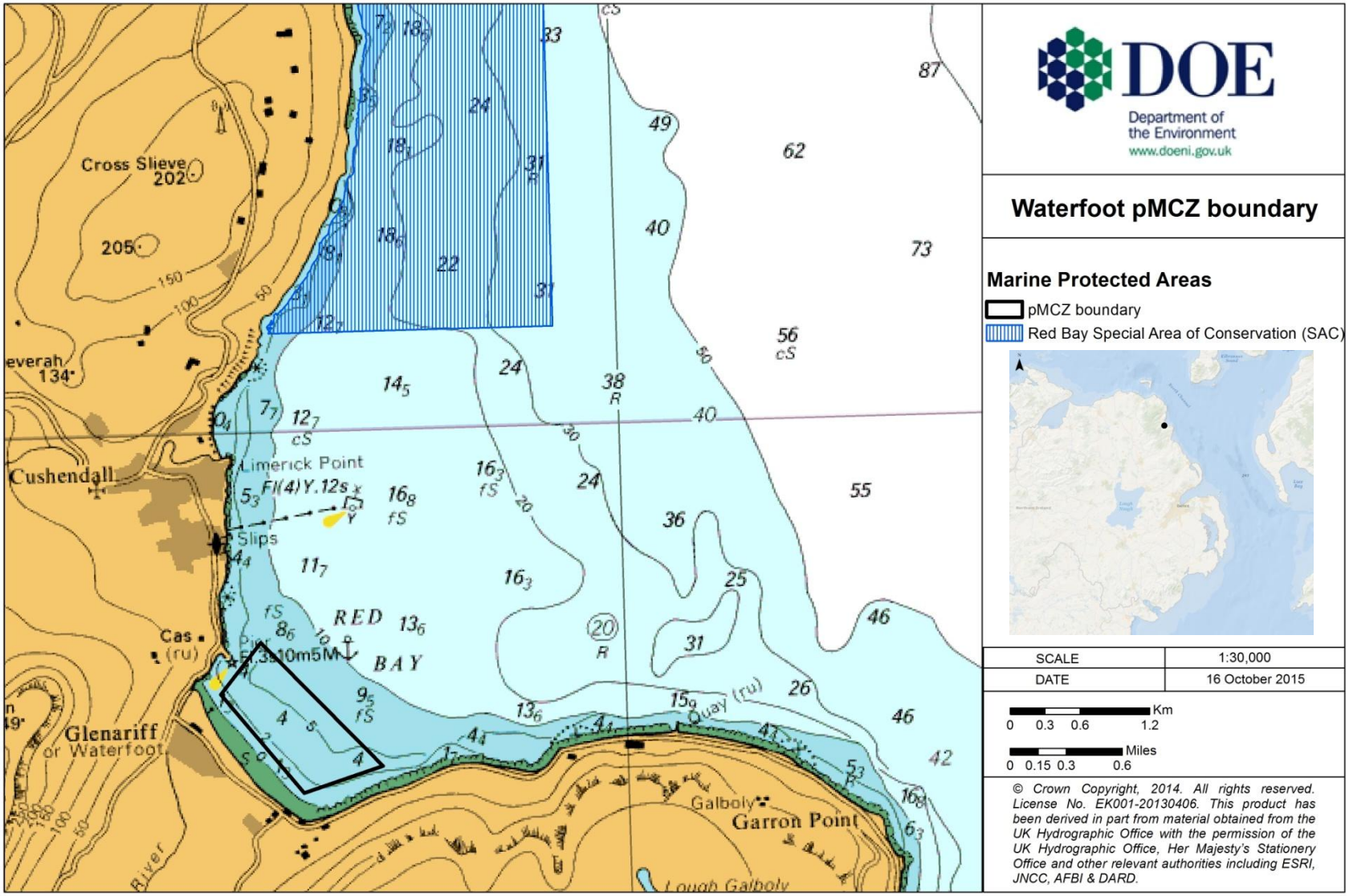

Figure 1 Location of proposed boundary of Waterfoot pMCZ

Conservation Objectives, Vulnerability Assessment and Proposed Features

A conservation objective is a statement of the desired ecological quality of a feature (habitat, species or geological) for which an MCZ is designated. The conservation objective establishes whether the feature condition meets the desired state and should be maintained, or falls below the desired state and should be recovered to favourable condition.

The conservation objectives are the first step towards developing Management Options and monitoring programmes. The procedure used to develop conservation objectives is described in the document Guidance on the development of Conservation Objectives and potential Management Options.

Vulnerability Assessment

A feature is vulnerable when it is exposed to a pressure to which it is sensitive. The vulnerability assessment is used to assess the vulnerability of a feature based on its sensitivity and current exposure to pressures (e.g. activities including climate change). It aids in the development of conservation objectives to give an indication of feature condition (both current and desired) and potential Management Options.

Proposed Features

Waterfoot has been proposed as a potential MCZ for the habitat **Subtidal (sublittoral) sand with subtidal seagrass beds (*Zostera marina*)**.

The pMCZ habitat consists of a shallow subtidal area of fine sand and gravelly sand with patchy seagrass meadows (*Zostera marina*). The biotope for this habitat is SS.SMp.SSgr.Zmar. The Waterfoot Seagrass bed, though patchy, is currently thought to be the largest subtidal example in Northern Ireland, and is considered to be in good condition. There are also Priority Marine Features (PMFs) present within and adjacent to the pMCZ boundary (such as the Masked crab, *Corystes cassivelanus*). A full list of these features is provided in Annex II. All PMFs within the pMCZ boundary will also be afforded protection based on vulnerability and risk assessment.

The location and extent of this pMCZ feature is shown in Figure 2. The map shows point records of the biotope (Northern Ireland Sublittoral Survey (NISS) 1982; Sublittoral Survey Northern Ireland (SSNI) 2006; Seasearch NI volunteer dives 2008-2012). Survey work carried out in 2015 confirmed the biotope extent and sediment types enabling a boundary to be drawn (DOE Waterfoot pMCZ support spyball and diving surveys 2015).

Seagrass beds are currently listed as a Priority Habitat by the UK Biodiversity Habitat Action Plan (BAP) and are listed on the OSPAR List of Threatened and/or Declining Species and Habitats (declining in Region II – North Sea and Region III – Celtic Sea, and threatened in Region V – Wider Atlantic, OSPAR agreement 2008-6).

As the Seagrass bed in Waterfoot pMCZ is currently in favourable condition, the Department recommends that the **conservation objectives are set to *maintain* this feature in favourable condition**.

Annex I gives more detail on the conservation objectives and the attributes against which the targets for the features are measured.

Figures 3-11 have been produced using the feature point data shown in Figure 2 to illustrate the location of various activities in relation to Waterfoot pMCZ. The Subtidal (sublittoral) sand habitat is thought to be present across the entirety of the pMCZ, and so for simplicity, this habitat has not been included in Figures 3-9.

Historic or Archaeological Interest

The Department's mechanism to protect underwater cultural heritage is principally the Protection of Wrecks Act 1973 and the Historic Monuments and Archaeological Objects Order 1995 and these will be utilised when and where appropriate. However, the Department will have regard to any historic assets that lie within the pMCZ boundary and these may be afforded incidental protection. It is recognised that management measures to protect pMCZ features could protect historic assets.

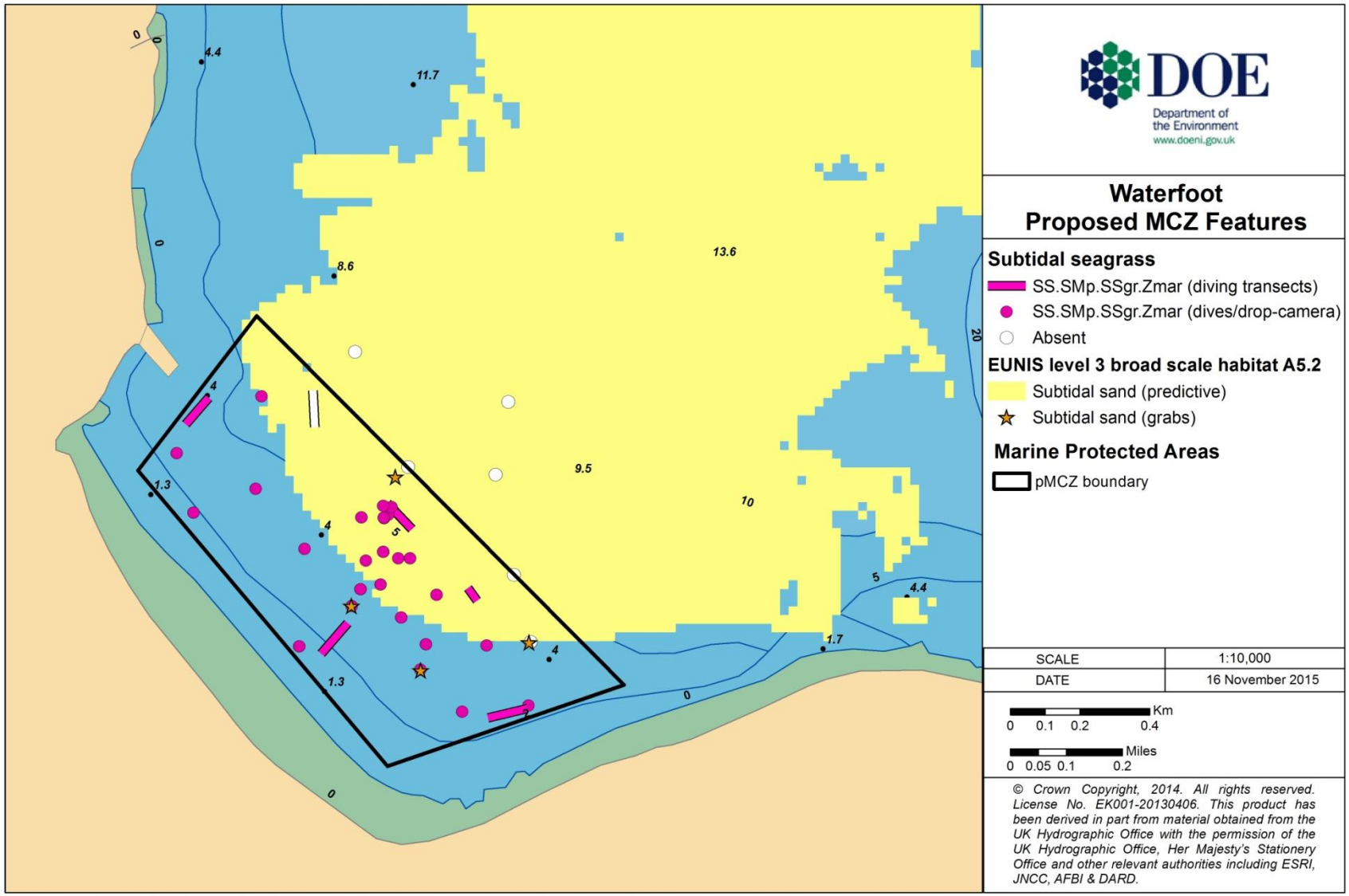

Figure 2 Distribution of the pMCZ features in Waterfoot

Activities and Potential Management Options in Waterfoot pMCZ

Table 1 lists the activities that have the potential to affect Waterfoot pMCZ. This list has been generated based on activities that are current, historical or already identified as potential future activities. Any activities that have not yet been considered, e.g. new emerging technologies or new fishing techniques will need to be considered as they are developed. This document discusses the various activities and their potential impacts on the proposed features and has been developed from a range of data, scientific literature including peer-reviewed publications and reports and stakeholder comments. Details of the literature used have been provided in a reference section at the end of this document.

All the activities are assessed against the level of impact or risk of damage to the proposed features based on the latter's vulnerability to each activity. Only those activities considered capable of affecting the proposed features (or likely to impact the feature) will be detailed in the management options. The management options considered for each activity include no management required, reduce or limit pressures, or to remove or avoid pressures altogether. Where management is required the options recommended will be implemented as management measures with reporting structures.

The document Guidance on the development of Conservation Objectives and potential Management Options fully details the procedure used to develop potential management options.

Advice on management implications

In order to meet the conservation objectives listed above, the relevant and competent authorities are required to manage activities within their remit to avoid significant loss, damage or change to the qualifying features of the site. Activities should be managed so that they do not result in:

- Removal and/or smothering;
- Physical damage resulting from anchoring, siltation, abrasion and/or selective extraction;
- Increased synthetic and/or non-synthetic toxic contamination;
- Nutrient and or organic enrichment, and
- Increases in turbidity.

Table 1 Activities that have the potential to affect Waterfoot pMCZ features.

Type of activity	Activities
Aquaculture	Finfish farms (Salmon)
Fishing	Creeling and pots (static gear) Scallop dredging (mobile gear)
Potential Energy production	Tidal Resource Zone Oil and Gas Exploration
Infrastructure	Marinas Coastal defence and land claim
Discharges/waste disposal	Waste water treatment works & outfalls
Extraction	Navigational dredging
Marine traffic	Moorings Boat anchorage Shipping/navigation
Recreation and tourism	SCUBA diving Recreational boating Kayaking/canoeing Bird watching Bathing waters Recreational fishing
Scientific and Archaeological activities	Environment/conservation status Research Monitoring

Aquaculture – *Fish culture*

There is one licensed salmon (*Salmo salar*) farm with sites in Red Bay and Glenarm Bay (Figure 3). The fish are produced organically and are stocked at approximately half the capacity of the cages. The cages are located in a high energy site with rapid dispersal of organic matter. An individual fish culture licence is granted for each site while a discharge consent has been granted under the Water Order (NI) 1999. The boats servicing the farm moor on Waterfoot/Red Bay Pier.

The cages are rotated throughout the licensed areas in order to reduce long-term impacts on the seabed. The organic salmon company that manages the farms employs a diving company to check the structure of nets, anchorage to the seabed and integrity of the site on a monthly basis. In addition, periodic diving monitoring, Remotely Operated Vehicle (ROV) surveys and water quality analysis is carried out by the Department to check compliance with consent conditions. The Department of Agriculture and Rural Development (DARD) also operates an inspection programme at the cage sites to ensure retention of farmed fish.

Potential impacts or pressures associated with finfish farms to which Seagrass beds are highly sensitive include **organic enrichment**, **physical change to another seabed type** and **siltation changes**.

It is unlikely that the sea cages would be located in the vicinity of the pMCZ as its sheltered, shallow location would be unsuitable for farming fish. **Therefore, it is considered that the risk of not achieving the conservation objectives for the proposed features is low unless the location or intensity of the fish farm activity were to change in the future.**

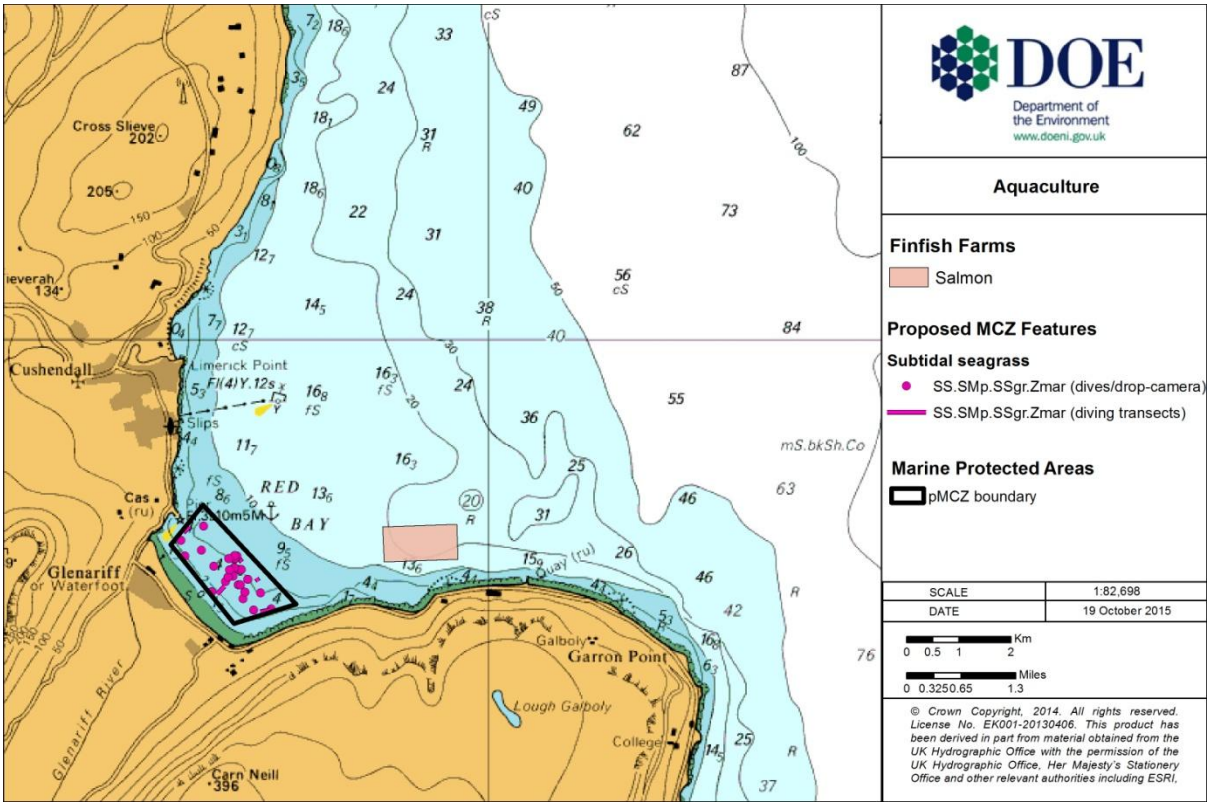

Figure 3 Location of the fish farm in relation to Waterfoot pMCZ

Potential Management Options	**Management measures are recommended to reduce or limit pressures** associated with **new finfish farms** and the **expansion** of existing aquaculture areas where they are likely to impact the Seagrass bed.
Proposed way forward	DARD will be responsible, through regulations, for the development of fisheries management measures to protect the pMCZ features. The Seagrass bed will be monitored within a 6-yearly rolling cycle to assess biotope distributions and species abundances. This will determine whether the conservation objectives are being achieved.
Relationship with existing Management Options	DARD is responsible for licensing fish farms under the provisions of the Fisheries Act (NI) 1966. Discharge consent is issued by the Department which is also responsible for site environmental quality monitoring.

Fishing – *Creeling, potting and scallop dredging*

The Red Bay area is fished mainly using static gear (pots and creels) for lobsters (*Homarus gammarus*) and crabs (*Cancer pagurus* and *Necora puber*) with some mobile gear (dredging) for scallops (*Pecten maximus*). Although a productive area for lobster and crab, dredging does not currently take place within the pMCZ and is at a minimum level in the wider Red Bay area. Figure 4 shows the overlap between commercial fishing in the area (fishing interest zones – DARD) and the pMCZ. VMS evidence shows that a small area of the pMCZ was recently trawled. Coincidently, the VMS track corresponds with areas in the pMCZ which are devoid of seagrass; this is clear cause and effect as to the potential for damage by scallop dredging to the sensitive pMCZ feature. Prior to 2015 VMS data only related to vessel sizes above 15m; this has now been reduced to include vessels of 12m and above.

Dredging gears have major impacts on Seagrass beds as they can cause **surface abrasion** (uproot plants or damage leaves) or can alter the sediment regime leading to **changes to different seabed type**. This can also cause damage by **removal of species** (both target and non-target species) and the **introduction and/or translocation of species**. **Mobile fishing should be avoided within the pMCZ boundary to aid the achievement of the conservation objectives.**

Fishing using pots and creels can also impact Seagrass beds through **surface abrasion** (either by propellers of fishing boats or through dragging pots and their lines when they are raised and inspected) and the **removal of species** (non-target species). Damage is related to the number of pots and hauling frequency and this activity does occur within the wider Red Bay area. There was no visible evidence of pot fishing within the pMCZ during any of the Department or Seasearch NI surveys indicating that the sandy area is not currently an active pot fishery. No target pot fishery species were observed during any of the surveys however the introduction of pot fishing could adversely impact the Seagrass beds within or adjacent to the pMCZ boundary. **Creeling and potting activity should be avoided within the pMCZ boundary to aid the continued achievement of the conservation objectives. It is also considered that limiting creeling and potting adjacent to the pMCZ would reduce potential pressures on the Seagrass bed feature.**

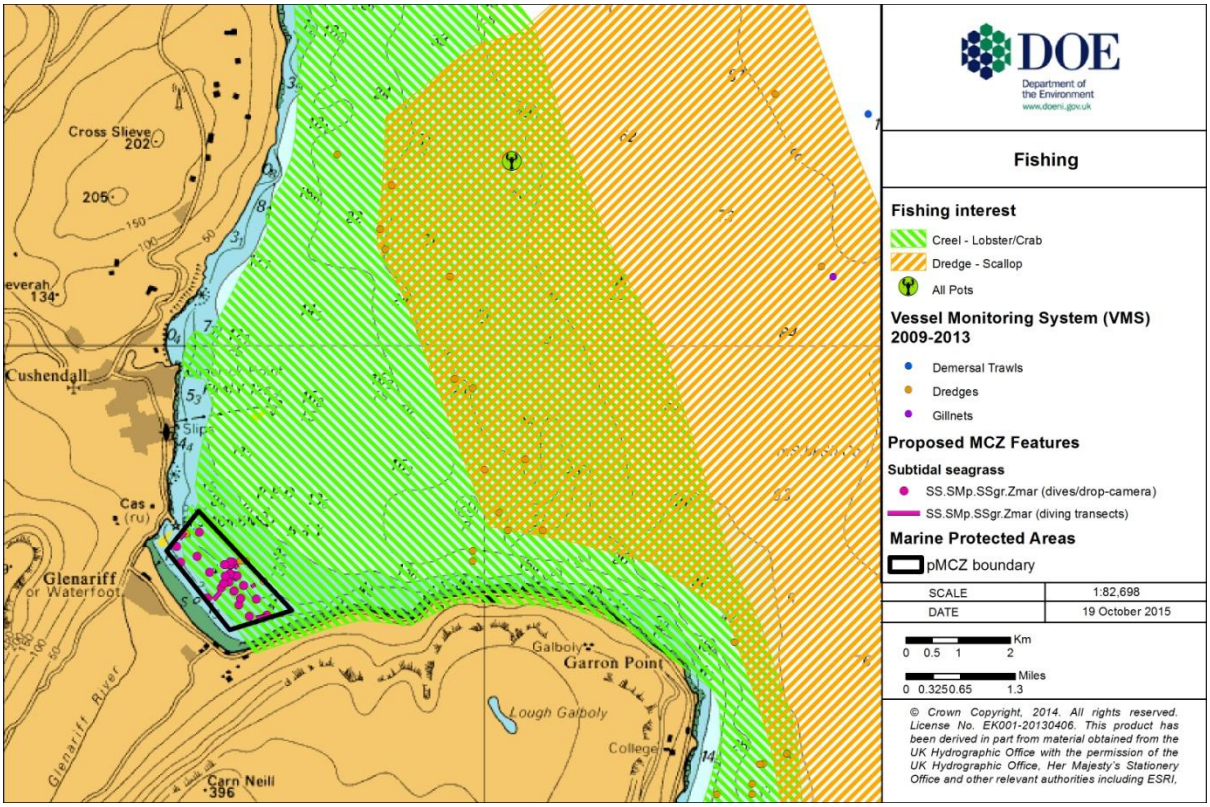

Figure 4 Location of Fisheries activities in relation to Waterfoot pMCZ

Potential Management Options	**Management measures are recommended to remove or avoid pressures** associated with **mobile fishing gear (scallop dredging)** where they are likely to impact the pMCZ features. **Management measures are recommended to remove or avoid pressures** associated with **current and future static gear fishing (creels and pots)** where they are likely to occur within the pMCZ and to **reduce or limit these pressures** where they occur adjacent to the pMCZ.
Proposed way forward	DARD will be responsible, through regulations, for the development of fisheries management measures to protect the pMCZ features. The Seagrass bed will be monitored within a 6-yearly rolling cycle to assess biotope distributions and species abundances. This will determine whether the conservation objectives are being achieved.
Relationship with existing Management Options	DARD is responsible for fisheries regulations in the Red Bay area. Sea fishing is regulated through the Fisheries Act (Northern Ireland) 1966.

Energy production – *Tidal resource zone and Oil and Gas exploration licence*

Tidal Resource Zone

The Offshore Renewable Strategic Environmental Assessment and Habitats Regulations Assessment by DETI assessed the potential for commercial and test/demonstration tidal stream sites in NI waters. These assessments indentified potential impacts of such developments and related mitigating actions to be considered at project developments stages.

A possible commercial scale Tidal Resource Zone was identified off the North Coast and within which, The Crown Estate, as managers of the seabed, has offered development rights to two consortia, Tidal Ventures Ltd and Fair Head Tidal. These companies are, through the EIA process, investigating the potential for two 100 MW projects at Torr Head and Fair Head respectively.

Waterfoot pMCZ lies 5.2km outside the southern tip of the Tidal Resource Zone and more than 18km away from the two tidal development sites at Torr Head and Fair Head.

Figure 5 shows the spatial extent of the Tidal Resource Zone (southern tip) and the pMCZ.

Seagrass beds have high to medium sensitivity to the following pressures associated with renewable energy development: **surface abrasion**, **changes in the seabed**, **water clarity changes or increased turbidity**, **water flow (tidal current) changes**, **wave exposure** and **introduction and/or translocation of species**.

There are no tidal energy developments in this area at the moment, and the Department is engaging with the developers and will consider their respective marine licence applications. The potential tidal development sites being investigated are approximately 5.2km away from the pMCZ. **It is considered that the risk of not meeting the conservation objectives for the proposed feature is low as the potential tidal developments are unlikely to affect the feature, however, the pressures and sensitivities of Waterfoot pMCZ will need to be considered.**

Oil and Gas Exploration Licence

The UK Government's Department of Energy and Climate Change (DECC) has granted Infrastrata an oil and gas exploration licence covering 5 offshore blocks in the Antrim Coast. This will require a well to be drilled within a 4 year period from when the licence was granted in December 2013. The Waterfoot pMCZ sits within this licensed area.

Subtidal seagrass has a high sensitivity to the following pressures associated with oil/gas extraction: **physical removal (extraction of substratum)** and **sub-surface**

abrasion/penetration and medium sensitivity to **introduction or spread of non-indigenous species and translocations**.

It is considered that the risk of not achieving the conservation objectives for the proposed features is high should exploration occur within the pMCZ.

There are no energy installations in this area at the moment, and the Department would be consulted on any installations within the pMCZ so the risk of not meeting the conservation objective is considered low.

Habitats Regulations Assessments (HRA) and the SEA report (Strategic Environmental Assessment, DETI) show that activities associated with energy production may result in the removal or disturbance of the substratum and these could have significant adverse effects on sensitive benthic habitats and species. However, with mitigating actions taken at the EIA/Projects stage these impacts would be reduced.

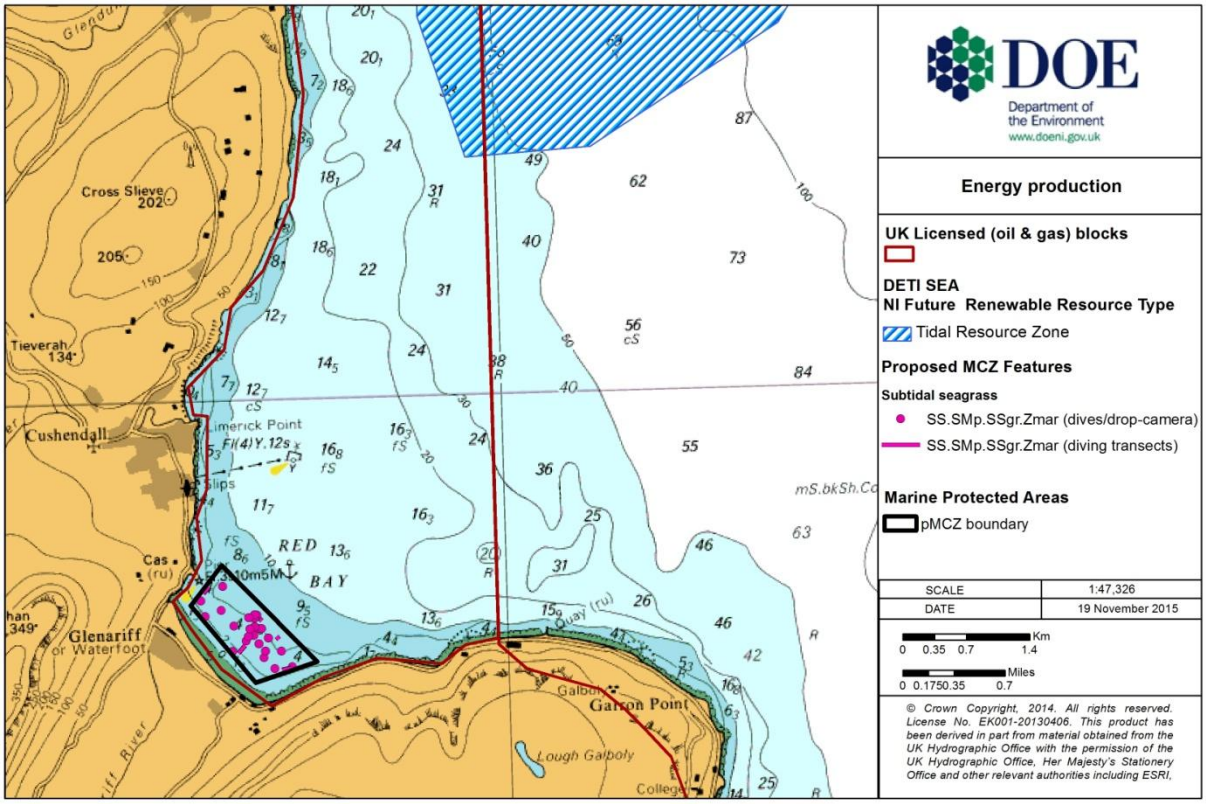

Figure 5 Location of Potential energy production areas in relation to Waterfoot pMCZ

Potential Management Options	**Management measures are recommended to remove or avoid pressures** associated with **potential development** of **tidal energy activities and associated operational activities** that are likely to impact the Subtidal seagrass bed.

	Management measures are recommended to remove or avoid pressures associated with **potential development of oil and gas activities and associated operational activities** that are likely to impact the Subtidal seagrass bed.
Proposed way forward	Any new development for renewable energy production will require a licence from the Department who will consider any potential impacts on the pMCZ.
Relationship with existing Management Options **Tidal** **Oil and Gas**	The Department is the marine licensing authority for the NI inshore region. DETI is the consenting authority for the construction and operation of electricity generation installations. DECC administers marine environmental regulations associated with oil and gas exploration and production and the decommissioning of marine installations, wells, pipelines and associated infrastructure in the UK marine area (excluding internal waters). The Crown Estate has an interest as the seabed and subsurface owner and leasing authority.

Infrastructure – *Piers, coastal defence and land claim*

In the Red Bay area there are two mooring areas close to the pMCZ: Cushendall (including Cushendall Yacht Club), known locally as the Waterfoot Slipway, and Waterfoot/Red Bay Pier. There are no permanent visitor moorings at present – in the past there were moorings owned by the local council which were managed by Red Bay Boats. Fishing vessels and fish farm service vessels tend to moor on the pier.

Coastal defences and land reclaim are localised management practices used to reduce the impact of erosion. The Red Bay area has hard coastal reinforcement close to the pier and Limerick point.

Infrastructure within or adjacent to the pMCZ is shown in Figure 6. There is no spatial overlap of any infrastructure with the pMCZ boundary. However, the construction, operations and maintenance of structures adjacent to the pMCZ have the potential to cause damage to the Seagrass bed. Specifically, the operations and expansion of existing infrastructure at Waterfoot Pier could affect the proposed features.

The main pressures linked to infrastructure operations in the area to which Subtidal seagrass beds have high sensitivity are: **physical change** (to another seabed type), **physical removal** (extraction of substratum), **siltation changes**, **surface abrasion/penetration**, **water clarity changes or increased turbidity**, and medium sensitivity: **introduction and/or translocation of species**, **wave exposure changes** (local) and **water flow changes** (tidal currents).

Habitat loss or alteration, and direct damage to individual species are the main risks associated with development of new infrastructure operations. In addition, the construction of new infrastructure may affect the local hydrodynamic, sediment transport regimes; consequently affect the sandy substratum with loss of associated species. **It is considered that the risk of not achieving the conservation objectives for the proposed features is low unless the location or intensity of infrastructure or associated operations was to change in the future.**

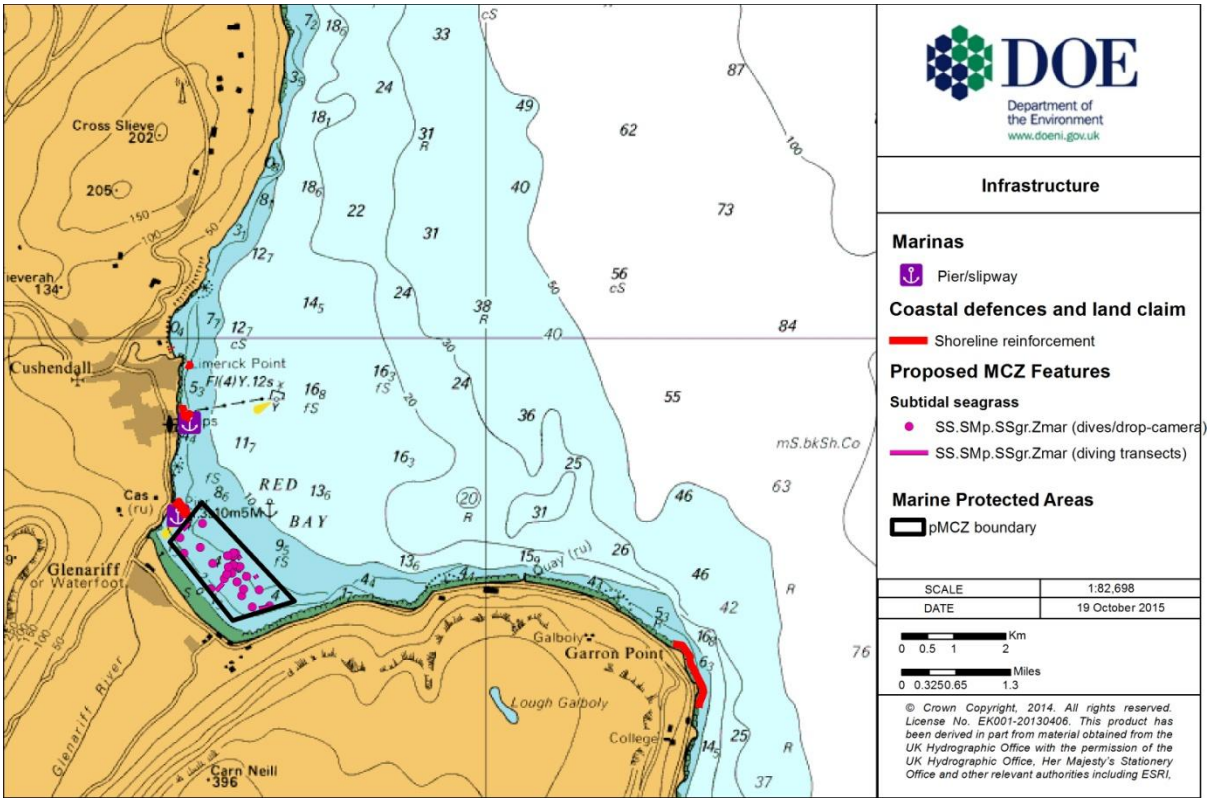

Figure 6 Location of Infrastructure in relation to Waterfoot pMCZ

Potential Management Options	**Management measures are recommended to remove or avoid pressures** associated with **new developments** and the **expansion** of the **Waterfoot/Red Bay Pier** area where they are likely to impact the Seagrass bed. **Management measures are recommended to reduce or limit pressures** associated with **new coastal defences** and the **expansion** of existing ones where they are likely to impact the Seagrass bed.
Proposed way forward	The Department will continue discussions with those involved with Infrastructure activities and operations within or adjacent to the pMCZ to help us to understand more about the interactions with the pMCZ features.
Relationship with existing Management Options	Any development of the marina will require a licence from the Department while planning decisions will be made by the local councils. Rivers Agency is responsible for sea defences designated under the Drainage (Northern Ireland) Order 1973.

Discharges/waste disposal – *Waste water treatment works and outfalls*

Waste water effluent is discharged from two sewage treatment works (outfalls) in the Red Bay area. Most sewage from the Waterfoot area is pumped to Cushendall Waste Water Treatment Works. The screened effluent is discharged via a long sea outfall more than 2km to the north east of the Waterfoot area. Although there is no secondary treatment for the discharge, the remote offshore location of the outfall pipe into the Bay and the North Channel allows the effluent to disperse and the Waterfoot Bathing Water Quality for 2014 was classified as good (Bathing Water Profile Waterfoot May 2015).

Another significant source of nutrients into the Red Bay area is via the Glenariff River which may contain diffuse agricultural pollution.

Seagrass is highly sensitive to **organic enrichment** and **siltation changes** due to sewage and agricultural pollution. The proposed habitat is also sensitive to **nitrogen and phosphorus enrichment** and **de-oxygenation**.

An increase in organic particulate matter, leading to a reduction in light penetration, increased smothering and subsequent reduction of the water flow around seagrass leaves, can adversely damage seagrass and the associated community structure. An increase in localised eutrophication could result in the dominance of opportunistic algal species such as *Ulva* sp. which could overgrow the seagrass plants resulting in seagrass die-back. Seagrass on Subtidal sand have a low tolerance and slow recovery to the above mentioned pressures.

Although there is no direct spatial overlap with the pMCZ, the outfalls are close to this site and the discharges could adversely impact the Seagrass bed (see Figure 7). **There is, therefore, a risk of not achieving the conservation objectives for the proposed features if there was an increase in waste water pollution from agricultural sources.**

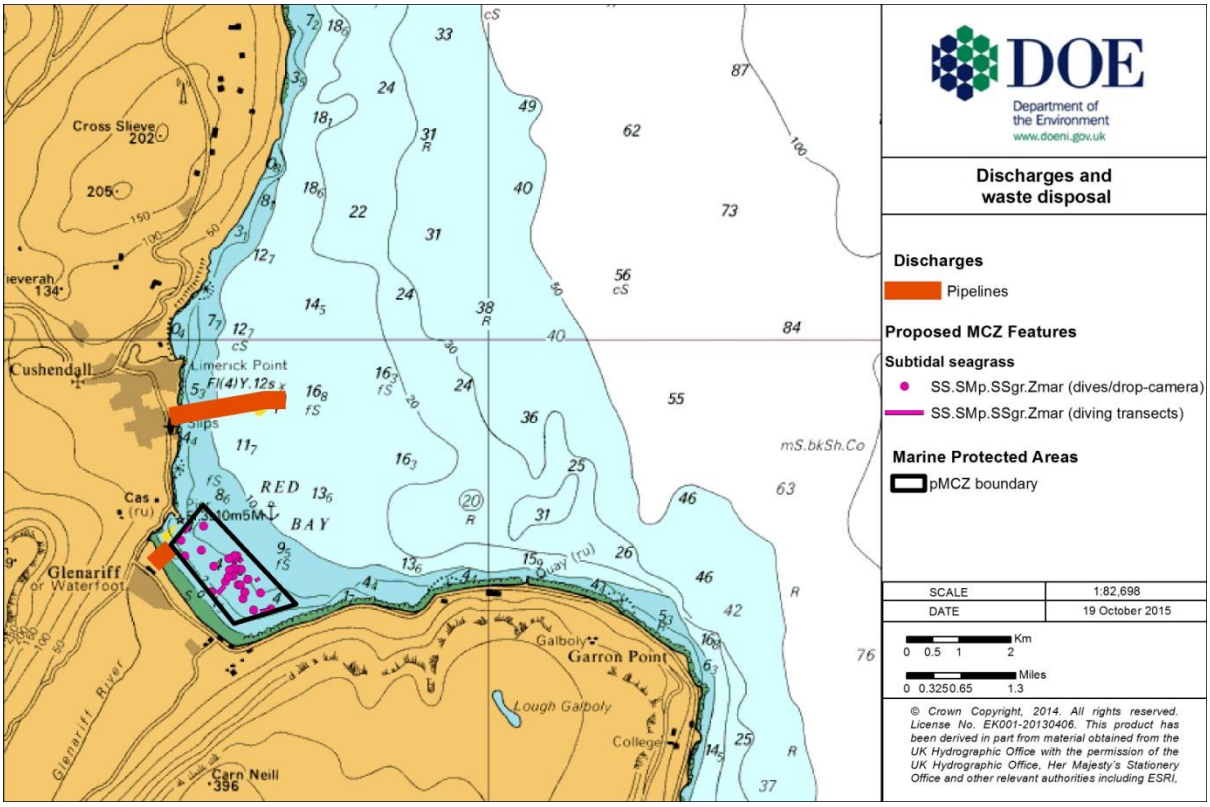

Figure 7 Location of Waste water discharge sites in relation to Waterfoot pMCZ

Potential Management Options	**Management measures are recommended to remove or avoid pressures** associated with **new discharge/waste disposal sites** (outfalls or pipelines) and the **expansion** of existing ones where they are likely to impact the Seagrass bed.
Proposed way forward	Any changes to the current discharge sites will be carried out by Northern Ireland Water (NIW) in consultation with the Department to determine any impacts to the pMCZ.
Relationship with existing Management Options	NIW is responsible for waste water treatment. Water discharges are governed by requirements in European legislation (The Urban Waste Water Treatment Directive (91/271/EEC), Water Framework Directive (WFD) and Nitrates Directive and Waste (Northern Ireland) Order 1999.

Extraction – *Maintenance dredging*

Dredging for maintenance purposes is a fundamental activity for ports, harbours and piers to ensure operational charted depths are maintained for safe access of vessels.

Potential dredging areas are shown in Figure 8. The potential environmental effects of maintenance dredging are generally two-fold, firstly as a result of the dredging process itself and secondly as a result of the disposal of the dredged material. Due to the proximity of Waterfoot Pier to the pMCZ boundary there is a risk that this activity may adversely affect the proposed features.

Dredging gears have major impacts on Seagrass beds as they can **remove species**, cause **surface abrasion** (uproot plants or damage leaves) or can alter the sediment regime leading to **changes to different seabed type**. They can also result in **de-oxygenation**, **smothering**, **organic enrichment** and **increase turbidity** through deposition of dredged material.

However, as no maintenance dredging currently takes place in the pMCZ it is considered that the risk of not achieving the conservation objectives for the proposed features is low unless the location or intensity of the dredging activity were to change in the future.

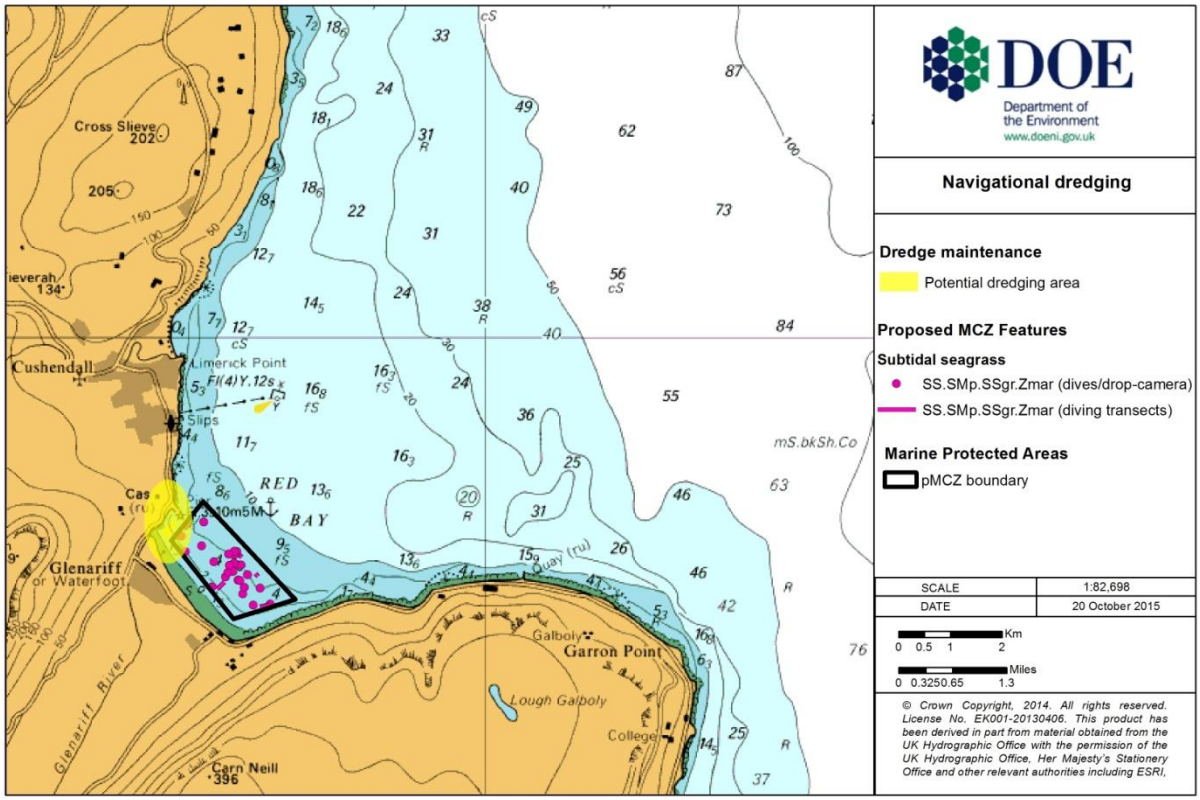

Figure 8 Location of Potential maintenance dredging sites in relation to Waterfoot pMCZ

Potential Management Options	**Dredging will not be permitted within the pMCZ. Management measures are recommended to limit or avoid pressures** associated with **dredging operations** where they take place adjacent to the pMCZ. Disposal of dredged material **will not be permitted** within the pMCZ.
Proposed way forward	The Department will continue discussions with the Harbour Authorities and relevant stakeholders to develop appropriate management measures.
Relationship with existing Management Options	The Department is responsible for licensing dredging and disposal activities in the Northern Ireland inshore region. Disposal of dredged materials at sea is regulated internationally under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention) and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention 1992). DRD, through the Harbour Works (Environmental Impact Assessment) Regulations (Northern Ireland) 2003 (as amended) can require Harbour Authorities to conduct an Environmental Impact Assessment for certain types of harbour works. Ports and harbours with a Harbour Order or Local Act in place may be exempt from the requirement to obtain a marine licence to carry out dredging and/or disposal within the harbour limits.

Marine traffic (commercial and recreational) – *Moorings and anchoring and shipping/navigation*

The Red Bay area is popular for yachting, with frequent visits from Scotland or marine vessels looking for anchorage in a sheltered spot on the passage through the North Channel. Although there is a licensed mooring area and one unrestricted boat anchorage point in the inner part of the Bay (facing Red Bay Castle), anchoring occurs all along Red Bay from Waterfoot to Cushendall. Occasionally, small recreational vessels are observed anchoring in the shallows just off Waterfoot beach. This is normally on calm days and in very shallow water to enable occupants to wade or swim to the beach. This activity may adversely affect the Seagrass feature, either through direct damage or by preventing expansion, if the vessels anchor within the pMCZ.

Shipping and navigation records in the area, shown in Figure 9, include fishing vessels and recreational vessels (sailing). The anchor symbol on the map indicates that the whole Bay is suitable for anchoring depending on prevailing winds, depth and presence of other vessels or obstructions. Anchoring can therefore occur within the pMCZ boundary so it is considered that the risk of damage to the Seagrass bed is high. Larger ships such as coasters and large offshore foreign flagged fishing vessels are known to anchor within the Red Bay anchorage. These vessels require deeper water for safe anchoring and as such are not considered a threat to the pMCZ.

The main pressure associated with marine traffic is **physical abrasion** associated with anchoring/mooring (surface and sub-surface abrasion/penetration). Anchoring and mooring can damage vegetation and rhizomes and bury seeds preventing their germination. This leads to increased patchiness and destabilization of the Seagrass bed. There is also a risk of **introduction and/or translocation of species.**

Anchoring activity should be avoided within the pMCZ boundary to aid the continued achievement of the conservation objectives. It is also considered that limiting the anchoring activity around the pMCZ would reduce potential pressures (such as increased turbidity) on the Seagrass bed feature.

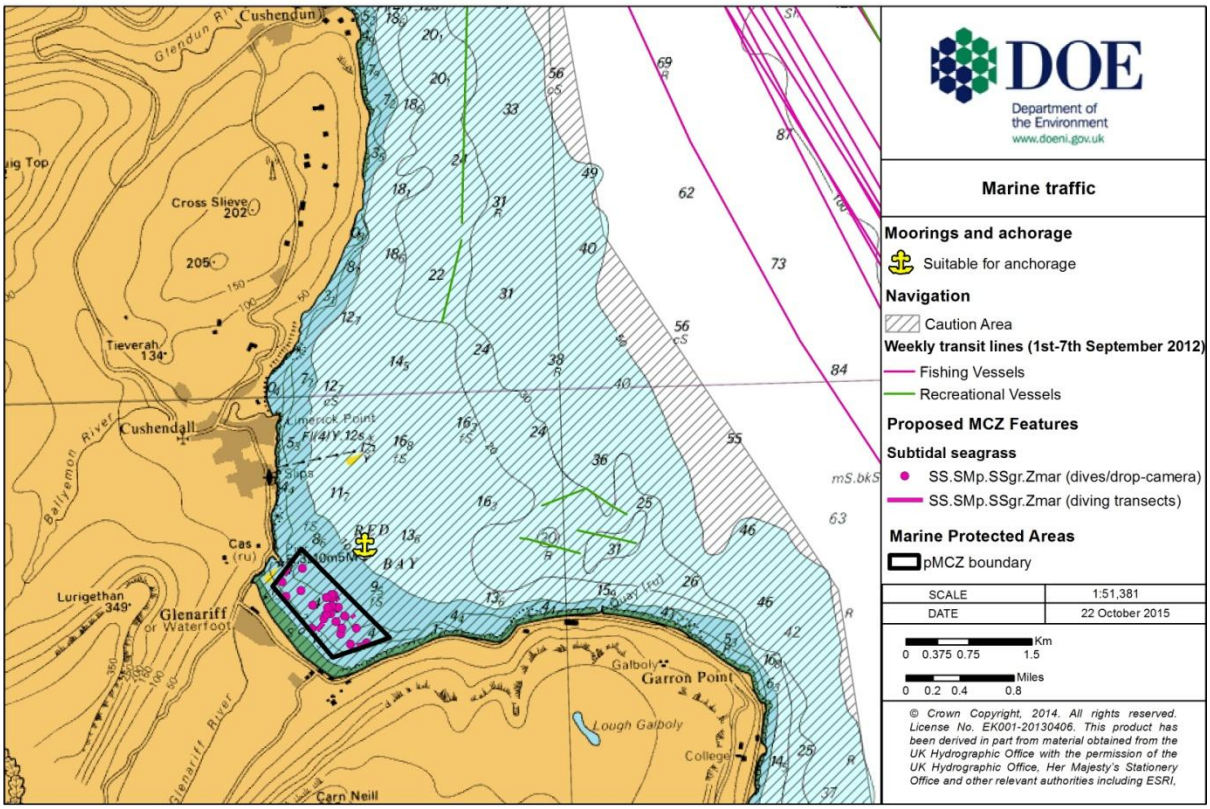

Figure 9 Location of Marine traffic in relation to Waterfoot pMCZ

Potential Management Options	**Management measures are recommended to remove or avoid pressures** associated with **current and future anchoring and mooring inside** the pMCZ where they are likely to impact the Seagrass bed. Reduce or limit pressures associated with anchoring and mooring adjacent to the pMCZ where they are likely to impact the Seagrass bed. At present no additional management is required for shipping or navigational activities.
Proposed way forward	The Department will continue to engage with those stakeholders involved in marine traffic in the Red Bay area to develop appropriate management measures.
Relationship with existing Management Options	Permanent moorings are leased by the Crown Estate, as owners of the seabed. Any new moorings will require a marine licence from the Department.

Recreation and tourism – *SCUBA diving, recreational boating, kayaking/canoeing, bird watching, bathing waters and recreational fishing*

The Red Bay area lies in the heart of the Glens of Antrim and is part of the Causeway Coastal Route. The area is popular with tourists, with walkers and campers frequenting Glenariff Forest Park while bathers are common on Waterfoot and Cushendall beaches.

Increase in the population of the local area may lead to an increase in the quantity of sewage discharged or increased disturbance to natural features and wildlife within the Red Bay area.

Water sports in the area are significant. A coastal canoe trail runs from Ballycastle to Larne with access points at Cushendall and Waterfoot. There is a history of jet-ski use in the area with jet-skis being launched off the beach and operating at speed within shallow areas. There is also an outdoor adventure centre in Cushendall organising activities such as coasteering and kayaking. Cushendall harbour hosts the Red Bay Sub-Aqua Diving Club, The Royal National Lifeboat Institution Red Bay (RNLI), Red Bay Boats (a powerboat manufacturing business) and Cushendall Sailing and Boating Club (CSBC). CSBC organises races and regattas in Red Bay for cruising yachts and sailing dinghies and also holds provincial and national events.

The Red Bay area is popular for shore (piers and beaches) and boat angling with peak times between August and September. Cod, plaice and dogfish are commonly landed here. The salmon cages to the south east of the bay attract coalfish and mackerel most of the year. Charter boats in the area offer fishing, sightseeing and marine wildlife watching trips along the Antrim Coast.

Figure 10 shows some of the recreation activities and tourism in the Red Bay area. There is spatial overlap between kayaking and the pMCZ. As sailing, yachting and power-boating may also occur within the pMCZ there is a risk that these activities may impact or damage the proposed feature.

Seagrass beds have moderate to high sensitivity to the following pressures associated with recreational and tourism activities: **surface abrasion and sub-surface abrasion or penetration** and **introduction and/or translocation of species.**

Power boats, motor boats and yachts could cause **abrasive damage** to vegetation and rhizomes and increase **turbidity** through sediment suspension which buries seeds, affecting the structure and distribution of shallow Seagrass beds. However, due to the depth of this area (4-9m) these activities are unlikely to adversely affect the pMCZ feature.

It is suggested that the transit of vessels within the pMCZ does not require active management; however, the use of anchors, moorings or buoys should be avoided in order to aid the continued achievement of the conservation objectives.

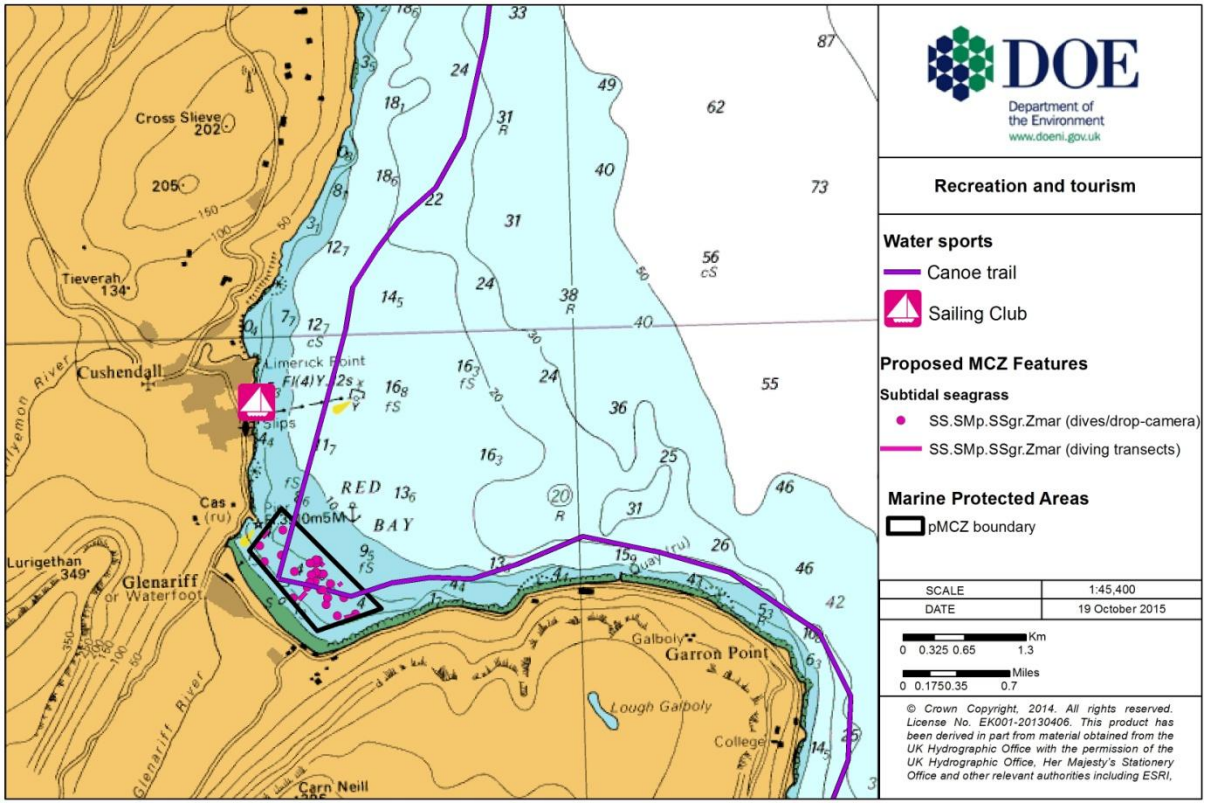

Figure 10 Location of Recreational activities in relation to Waterfoot pMCZ

Potential Management Options	**Management measures are recommended to remove or avoid pressures** associated with current and future **anchoring and mooring inside** the pMCZ where they are likely to impact the Seagrass bed. **Management measures are recommended to reduce or limit pressures** associated with **recreation and tourism** within the proposed boundary where they are likely to impact the Seagrass bed.
Proposed way forward	The Department will continue discussions with those involved with recreation and tourism activities in the Red Bay area to develop appropriate management measures.

Relationship with existing Management Options	DETI is responsible for tourism policy while the District Councils have a role in promoting local tourism and recreation. DCAL has a responsibility for arts and culture, sport, inland waterways and inland fisheries. The Crown Estate and The Department are responsible for the licensing of any proposed moorings within the pMCZ.

Scientific and Archaeological Activities – *Research and monitoring*

The Red Bay area is subjected to a variety of environmental monitoring programmes (refer to Figure 11).

DOE, together with National Museums of Northern Ireland (NMNI), completed a series of Sublittoral Dive Surveys (SSNI) to collect data on the distribution and condition of Northern Ireland Conservation Priority Species.

There is also a DOE sampling site for opportunistic macroalgal as a tool to monitor the intertidal sedimentary shores under the Water Framework Directive (WFD).

Additionally, DOE carries out diving/monitoring of the seabed under Glenarm Salmon sea-cages to check compliance with consent conditions. The seabed is also monitored at a distance of 1km from the cages to provide reference conditions.

There are no recorded archaeological features falling within the boundaries of the Waterfoot pMCZ. However, there are a number of historic wrecks located within the wider Red Bay area (although the location of these wrecks is not yet confirmed). Given locational discrepancies, the possibility of wrecks lying inside the pMCZ cannot be discounted but these features are likely to be buried and/or fragmentary.

Scientific and Archaeological research and monitoring activities may have the potential to cause the deterioration of the proposed habitat and species through **direct alteration**, **removal or manipulation of the species associated to the biotope**.

Strict guidelines and practices developed by JNCC for survey work seek to ensure that any impact on features is minimised to the lowest possible levels and that the conservation objectives can be achieved.

It is considered that the risk of not achieving the conservation objectives of the protected features is negligible since scientific and archaeological activities under the above mentioned surveys are performed by trained, qualified staff using non-invasive techniques such as acoustic and video methodologies. The Department will require the provision of detailed methodologies for all Scientific and Archaeological activities prior to these being carried out to assess if any impacts to the proposed features are likely to occur.

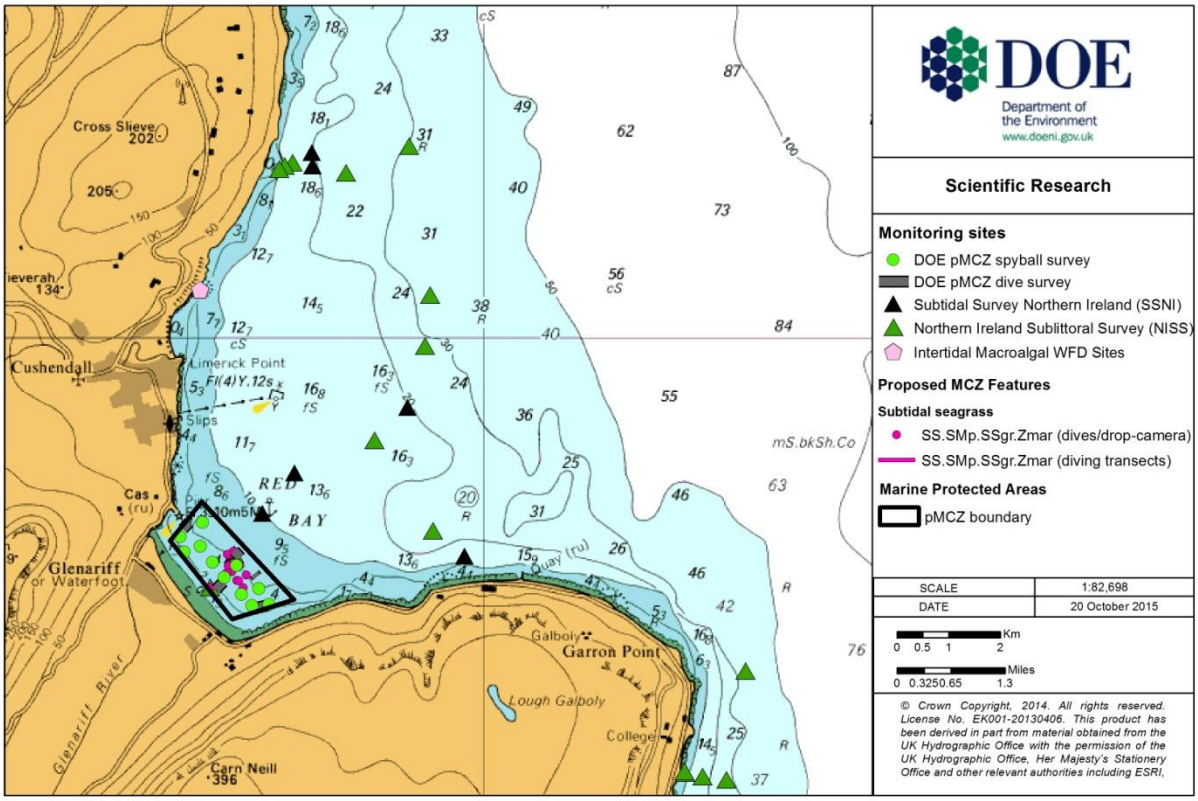

Figure 11 Location of Scientific research/monitoring in relation to Waterfoot pMCZ

Potential Management Options	**No additional management required** as Scientific and Archaeological activities are carried out following strict guidelines enforcing non-destructive sampling methods.
Proposed way forward	The Seagrass bed will be monitored within a 6 yearly rolling cycle to assess biotope distributions and species abundances. This will determine whether the conservation objectives are being achieved. The Department will require the provision of detailed methodologies for all Scientific and Archaeological activities prior to these being carried out to assess if any impacts to the proposed features are likely to occur.
Relationship with existing Management Options	Delivered by the Department under international, European and national legislation with marine component (Marine Strategy Framework Directive; Marine and Coastal Access Act 2009; The Marine Act (Northern Ireland) 2013; OSPAR).

Summary of Potential Management Options

Aquaculture: *Finfish*	**Management measures are recommended to reduce or limit pressures** associated with **new finfish farms** and the **expansion** of existing aquaculture areas where they are likely to impact the Seagrass bed.
Fishing: *Mobile gear – scallop dredging*	**Management measures are recommended to remove or avoid pressures** associated with **mobile fishing gear (scallop dredging)** where they are likely to impact the pMCZ features.
Static gear – creeling and pots	**Management measures are recommended to remove or avoid pressures** associated with **current and future static gear fishing (creels and pots)** where they are likely to occur within the pMCZ and to **reduce or limit these pressures** where they occur adjacent to the pMCZ.
Energy production: *Tidal resource zone*	**Management measures are recommended to remove or avoid pressures** associated with **potential development of tidal energy activities and associated operational activities** where they are likely to impact the Subtidal seagrass bed.
Oil and gas exploration licence	**Management measures are recommended to remove or avoid pressures** associated with **potential development of oil and gas activities and associated operational activities** that are likely to impact the Subtidal seagrass bed.
Infrastructure: *Piers,*	**Management measures are recommended to remove or avoid pressures** associated with **new developments** and the **expansion** of the **Waterfoot/Red Bay Pier** area where they are likely to impact the Seagrass bed.
Coastal defence and land claim,	**Management measures are recommended to reduce or limit pressures** associated with **new coastal defences** and the **expansion** of existing ones where they are likely to impact the Seagrass bed.
Discharges/waste disposal: *Waste water treatment works & outfalls.*	**Management measures are recommended to remove or avoid pressures** associated with **new discharge/waste disposal sites** (outfalls or pipelines) and the **expansion** of existing ones where they are likely to impact the Seagrass bed.

Extraction: *Navigational (maintenance) dredging.*	**Dredging will not be permitted within the pMCZ.** **Management measures are recommended to limit or avoid pressures** associated with **dredging operations** where they take place adjacent to the pMCZ. Disposal of dredged material **will not be permitted** within the pMCZ.
Marine traffic: *Moorings and Anchoring,* *Shipping/navigation*	**Management measures are recommended to remove or avoid pressures** associated with **current and future anchoring and mooring inside** the pMCZ where they are likely to impact the Seagrass bed. Reduce or limit pressures associated with anchoring and mooring adjacent to the pMCZ where they are likely to impact the Seagrass bed. At present no additional management is required for shipping or navigational activities.
Recreation and tourism: *SCUBA diving, sailing, kayaking/canoeing, bird watching, bathing waters, recreational fishing.*	**Management measures are recommended to remove or avoid pressures** associated with current and future **anchoring and mooring inside** the pMCZ where they are likely to impact the Seagrass bed. **Management measures are recommended to reduce or limit pressures** associated with **recreation and tourism** within the proposed boundary where they are likely to impact the Seagrass bed.
Scientific research: *Environment/Conservation status monitoring.*	**No additional management required** as Scientific and Archaeological activities are carried out following strict guidelines enforcing non-destructive sampling methods.

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Annex I

Conservation Objectives for Waterfoot pMCZ

In general the conservation objectives for Waterfoot pMCZ are that the protected features:

- where they are already in *favourable condition*, remain so, and
- where they are not in *favourable condition*, are brought into such condition and remain so.

Favourable Condition is defined as 'the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site'. With respect to a marine habitat, *favourable condition* means that its extent is stable or increasing and its structures and functions, quality and the composition of its characteristic biological communities are in a condition which is healthy and not deteriorating. Characteristic biological communities include reference to the diversity and abundance of marine species (both flora and fauna) forming part of, or inhabiting that habitat. Any temporary deterioration in condition is to be disregarded if the marine habitat is sufficiently healthy and resilient to enable its recovery from such deterioration.

The conservation objective has been drafted for the pMCZ feature of Seagrass beds but particular reference is given to associated community features to which the conservation objective also applies. The purpose of this is to provide some reference points, against which the success of the conservation objectives and the management plan can be measured.

By monitoring attributes of these features and sub-features, which have been identified to provide an indication of the condition of the feature, it should be possible to identify trends or changes in these habitats and whether or not these changes are natural or caused by human activities. This monitoring is essential in order to ensure that these habitats are being kept in favourable condition, the condition in which the habitat or species is capable of sustaining itself on a long-term basis.

Conservation Objective

To maintain[1] the Seagrass beds in *favourable condition*, taking account of natural change such that:

- The natural environmental quality[2] is maintained
- The natural environmental processes[3] are maintained
- The extent[4], diversity[5], community structure[6] and typical species[7] representative of the habitat are maintained.

Particular reference is given to:

Gravel and sand communities
Mixed sediment communities

Explanation of terms used in the Conservation Objectives

1. Maintain or Restore/recover

Maintain implies that the feature is in favourable condition and will, subject to natural change, remain at its condition at designation. Any existing activities are deemed to be sustainable and will not adversely affect the condition of the feature *if current practices are continued at current levels.*

Restore/recover implies that the feature is degraded to some degree and that activities will have to be managed to reduce or eliminate negative impact(s). Restoration in the marine environment can refers to natural recovery through the removal of unsustainable physical, chemical and biological pressures, as well as intervention.

2. *Natural environmental quality*

e.g. chemical quality parameters of water, suspended sediment levels, radionuclide levels etc. should not deviate from baseline at designation (if available) or reference conditions.

3. *Natural environmental processes*

e.g. circulation, sediment deposition and erosion etc. should not deviate from baseline at designation (if available) or reference conditions.

4. *Extent*

The area covered by the habitat and communities

5. *Diversity*

The number of different biological species and communities

6. *Community structure*

e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility.

7. *Typical species*

See Annex II

Monitoring Priorities

Monitoring will add to the existing baseline of information and where appropriate, existing survey work will be repeated in order to ensure that it conforms to the agreed monitoring methods.

For Seagrass beds a survey of its distribution and species counts in sample areas will provide sufficient information.

The following table (Table 1) outlines the various types of monitoring that the Department considers are necessary in order to be able to assess the condition of the MCZ's interest features (habitats and species). By monitoring various aspects or attributes of these features, it is possible to build up a picture of what is happening to the site and whether or not there needs to be changes made to the ways in which it is managed. The aim is to ensure that the interest features remain in a favourable condition which can be said to occur when the target for each attribute is reached.

Table 1 Favourable condition table for Waterfoot pMCZ

To effectively describe, monitor and manage the defined habitat feature it has been necessary to include associated habitats, named here as sub-features. Sub-features are distinct biological communities (e.g. sand and gravel communities, mixed sediment communities) or particular structural or geographical elements of the feature. It has often proved helpful, both in the development of conservation objectives and of monitoring programs, to separate the feature in to a number of constituent sub-features, and then to identify attributes and targets for the sub-features.

Feature	Sub-Feature	Attribute	Measure	Target	Comments
Seagrass beds		Extent	Area (ha) of Seagrass beds measured during peak growth period twice during reporting cycle.	No decrease in extent from an established baseline subject to natural change.	The extent and distribution of the Seagrass beds provides a long-term integrated measure of environmental conditions.
		Characteristic epiphytic species – density of *Zostera marina*	Average density, measured during peak growth period twice during reporting cycle.	Average density should not deviate significantly from an established baseline, subject to natural change.	An early indicator of seagrass under stress is a reduction in biomass, i.e. the number and length of leaves. Density is preferred as a surrogate for biomass, being less destructive, based on baseline survey to establish the relationship between density and biomass at a site.
		Characteristic species – epiphyte community	Presence and abundance of epiphytic species measured during August/September twice during reporting cycle	Presence and abundance of epiphytic species should not deviate significantly from the established baseline, subject to natural change.	The occurrence and frequency of epiphytes is indicative of the structure of the seagrass bed communities. It gives an indication of their quality and changes in epiphytic composition may indicate cyclic change/trend in the host

Feature	Sub-Feature	Attribute	Measure	Target	Comments
					biotope or the Subtidal sandbank communities as a whole.
		Nutrient status – green algal mat	Extent across whole or parts of the site, measured during peak growth period every 3 years during the reporting cycle.	No increase in extent of green algal mats from an established baseline, subject to natural change.	Nutrient status is a key functional factor that influences the sub-feature as opportunistic macroalgae compete with seagrass and affect the associated species. Increase in filamentous green algae may be a related natural phenomenon or may indicate eutrophication.
	Gravel and sand communities	Species composition of characteristic biotopes	Presence and abundance of composite species from some or all of the biotopes. Measured once during reporting cycle.	Presence and abundance of composite species should not deviate significantly from an established baseline, subject to natural change.	Species composition is an important contributor to the structure of the biotopes within the sub-feature. The presence and relative abundance of characterising species gives an indication of the quality of the biotopes and change in composition may indicate cyclic change/trend in Subtidal sandbank communities.
	Mixed sediment communities	Species composition of characteristic biotopes	Frequency and occurrence of composite species from some or all of the biotopes. Measured once during reporting cycle.	Presence and abundance of composite species from some or all of the biotopes. Measured once during reporting cycle.	Species composition is an important contributor to the structure of the biotopes within the sub-feature. The presence and relative abundance of characterising species gives an indication of the quality of the biotopes and change in composition may indicate cyclic change/trend in Subtidal sandbank communities.

Annex II

Priority Marine Features (PMFs)

Table 1 List of Priority Marine Features recorded within ▭ or adjacent (40 m) ▭ to the pMCZ.

Habitats	
Subtidal (sublittoral) sand	
Subtidal (sublittoral) seagrass beds	
Low mobility species	
Common name	**Latin name**
Masked crab	*Corystes cassivelanus*
European lobster	*Homarus gamarus*
Ocean quahog	*Arctica islandica*
Highly mobile species	
Lesser spotted dogfish	*Scyliorhinus canicula*
Cod	*Gadus morhua*

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Photos represent Priority Marine Features found throughout the Northern Ireland Inshore Region