

Conservation Objectives and Potential Management Options

Rathlin

Proposed Marine Conservation Zone (pMCZ)

Black guillemot (*Cepphus grylle*) @jdoherthy



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Summary

This document provides information on the various uses and activities occurring on Rathlin 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 features to be protected.

The information is organised by the type of activity, and describes briefly potential impacts on features and potential management options. The grouping of activities is based on the standardised UK pressures-activity matrix¹, 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, the features vulnerability assessment and the conservation objectives of the pMCZ features. The management options will only include activities considered capable of affecting the features of the pMCZ based on the risk of damage assessment. The management options will also need to consider the existing management developed for the SAC/SPA designations to ensure they are harmonised.

This paper 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 and types 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 for the pMCZ.

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

Additional information on Rathlin 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 Rathlin proposed Marine Conservation Zone (pMCZ)
- Data Confidence Assessment for Rathlin proposed Marine Conservation Zone (pMCZ)
- Site Summary Document for Rathlin proposed Marine Conservation Zone (pMCZ)

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

ASSI - Area of Special Scientific Interest are notified under The Environment (Northern Ireland) Order 2002

BG - Black guillemot

Circalittoral – described 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.

DCAL - Department of Culture, Arts and Leisure

DETI - Department of Enterprise, Trade and Investment

DOE - Department of the Environment (also referred to as the Department in the text)

DRD - Department for Regional Development

DSB - Deep-sea bed is a term used to describe sublittoral habitats found at depths >200m with the EUNIS Broad scale habitat Deep-sea bed (EUNIS code: A6).

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

HRA - Habitats Regulations Assessment is a tool to help competent authorities (as defined in the Habitats Regulations) to carry out assessment to ensure that a project, plan or policy will not have an adverse effect on the integrity of any Natura 2000 site

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 an MCZ).

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 features that will underpin the MCZ designation

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

SPA - Special Protection Area, designated under the Birds Directive

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

Introduction

Rathlin Island lies 9.6km off the north coast of County Antrim, Northern Ireland. The diverse coastal habitats that surround Rathlin have gained international recognition as it supports a wide diversity of marine life ranging from seabirds to sponges.

The pMCZ surrounds Rathlin Island (extends landward to the MHW mark) with a large extension between the north of the Island and the North Channel encompassing an area of 92.62 km² (Figure 1). The pMCZ encompasses the only known location of the Deep-sea bed habitat (>200 metres) in Northern Ireland's inshore waters. In 2007, a highly specialised seabed survey (Joint Irish Bathymetric Survey) began, yielding information which led to the discovery of geological and geomorphological features including submerged cliffs, lagoons and sea arches (for more information refer to <http://www.science.ulster.ac.uk/cma/instar/landscapes.htm>). Seabird surveys have shown that the cliffs and sea area between Bull Island and Church Bay are important breeding and feeding areas for the Black guillemot.

Rathlin Island and its surrounding waters are recognised worldwide for their remarkable wildlife and landscape providing valuable revenue to the people who live and work here through tourism and recreation. Church Bay has a marina, anchorage area and slipway for the ferries from Ballycastle. The ferry and other vessels provide islanders and visitors access to and from the Island. Rathlin has a canoe trail around the island and is a very popular diving location due to the diverse marine life along with the spectacular underwater geology. Rathlin Island also has Northern Ireland's largest seabird colony which includes gannets, gulls and puffins.

Recent analysis of shipping transit data shows that the International Maritime Organisation (IMO) traffic separation zone, approximately 8km north east of Rathlin, has significant traffic (primarily cargo ships) moving through this area, part of which falls within the pMCZ boundary.

A small aquaculture venture was granted a licence in 2013 to grow and harvest the seaweed, kelp, on longlines in a 0.07km² area in Church Bay. There is a small inshore potting industry primarily landing brown crab (*Cancer pagurus*) and lobster (*Homarus gammarus*). Further offshore, to the north and east of Rathlin, King and Queen Scallop dredging occurs, although the landings are low compared to fishing vessels along the east coast of Northern Ireland (DARD Inshore fisheries report).

Rathlin pMCZ encompasses a Special Area of Conservation (SAC) and a Special Protection Area (SPA) and falls within the Antrim Coast and Glens Area of Outstanding Natural Beauty (AONB).

Further information on the pMCZ can be found in the site summary document.

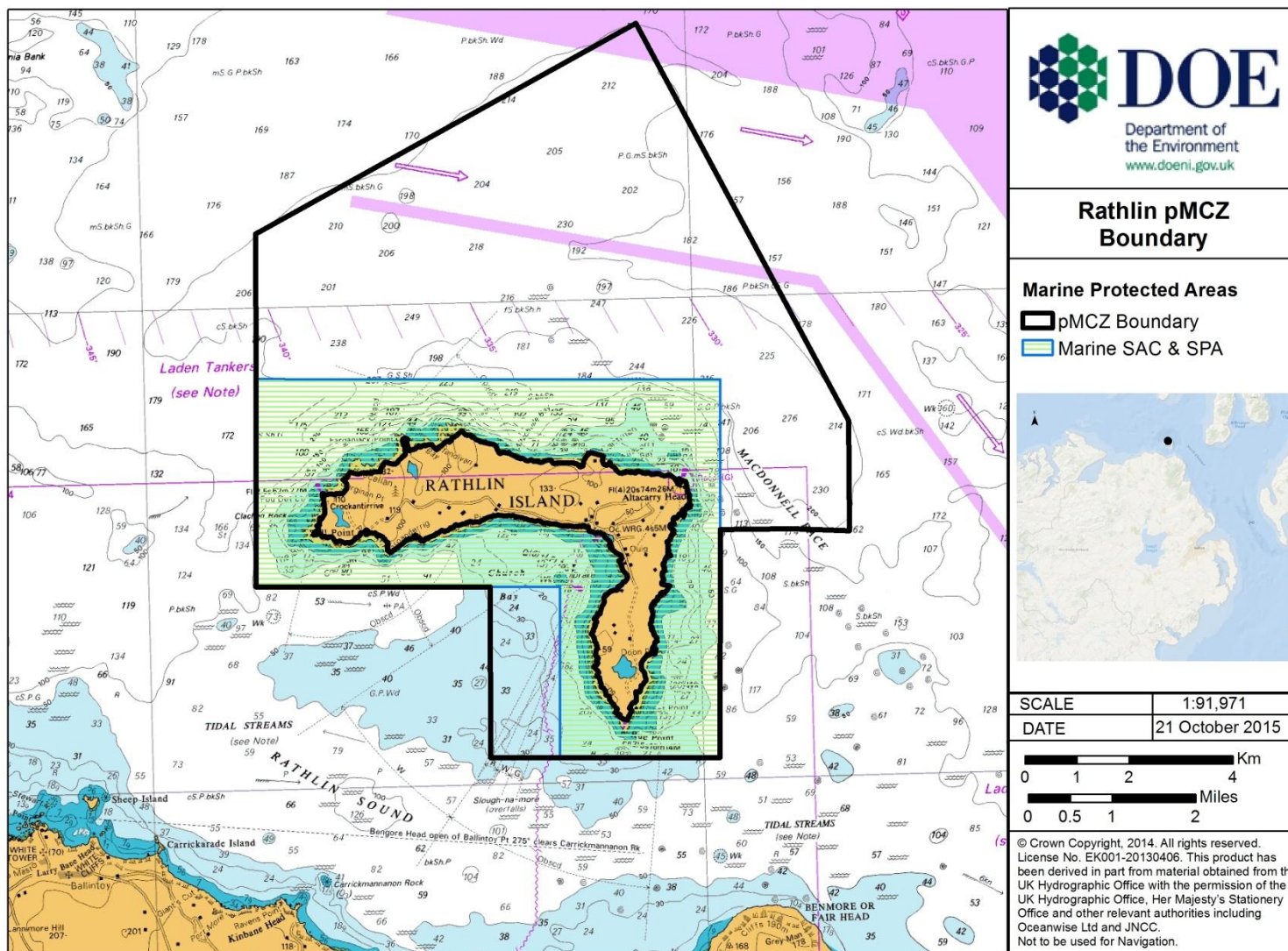


Figure 1 Location of the proposed boundary of Rathlin pMCZ

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 establish 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 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

Rathlin pMCZ has been proposed as a potential MCZ for the broadscale habitat **Deep-sea bed**, the species **Black guillemot** and Geological/geomorphological **features indicating past change in relative sea level (Submerged lagoons and sea arches)**

There are also Priority Marine Features (PMFs) present within and adjacent to the pMCZ boundary. A full list of these features is provided in Annex II. All PMFs within the pMCZ boundary will be afforded a level of protection based on vulnerability and risk assessment.

Habitats

An area of the broadscale habitat, Deep-sea bed (>200m), extracted from predictive habitat mapping, located to the North of Rathlin, has been included within the boundary of this pMCZ. This habitat is particularly unique in NI inshore waters due to the steep drop off in depth, close proximity to land and range of deep subtidal sands, mixed sediments and rock. The depth, exposure to strong currents and substrate type are ideal habitat for unique biological components such as deep-sea sponge aggregations or deep-sea cold water coral reefs. To date there have been no records of these reefs in Northern Ireland but further survey work in the Deep-sea bed off Rathlin may locate the feature. Deep-sea bed has also been associated with Common skate. Common skate are assessed as critically endangered

on the IUCN Red List and included on the OSPAR List of Threatened and/or Declining Species and Habitats. Furthermore, they are listed as a protected species under Schedule 5 to the Wildlife (Northern Ireland) Order 1985 (as amended). Local fishermen have reported large Common skate being recaptured in this area off Rathlin suggesting they exhibit site fidelity but there is insufficient robust data to support inclusion of skate as a feature within the pMCZ at this stage.

The location and extent of the Deep-sea bed habitat is illustrated in Figure 2. This map shows the predicted habitat (UK and EU predictive habitat mapping) along with high resolution bathymetric data obtained during the JIBS survey (Joint Irish Bathymetric Survey 2008) and video and grab points (AFBI surveys 2014/2015). These surveys indicate that the habitat is composed of mixed sediment with areas of Subtidal sand and upper slope rock reef.

As the Deep-sea bed feature in Rathlin pMCZ is currently in favourable condition, the Department recommends that the **conservation objectives are set to *maintain this feature in favourable condition***.

Highly Mobile Species

The rich waters between Bull Island and Church Bay support a relatively large population of breeding Black guillemots (*Cepphus grylle*, figure 2). Butterfish (*Pholis gunnellus*) and blennies, the primary source of food for this species, are typically found in the kelp forests present along this stretch of coastline. The nests in the nearby cliffs and rocky crevices are afforded incidental protection by the existing SAC/SPA and ASSI designations in the area. These birds tend to feed close inshore and rarely move far from the breeding area even in winter, however, juveniles may disperse further to other colonies. Black guillemot have long been associated with Rathlin, however, a recent report highlighted a significant decline in numbers of adult birds, between 2000 and 2013 (Leonard & Wolsey, 2013). This may be due to the distribution of prey species (butterfish) causing juvenile birds to disperse from food poor areas though further evidence is needed to confirm this hypothesis. Black guillemot, like other nesting seabirds are highly sensitive to predation from introduced mammals such as ferrets, brown rats, feral and domestic cats. Predation, particularly during the breeding season can lead to a significant decline in the species' population (Mitchell, 2004; RSPB, 2015). The Rathlin Island European Marine Site Management Scheme identified the control and removal of mammalian predators as one of the management actions required to reduce the impact predation has on breeding seabirds.

Black guillemot is currently on the IUCN Red List and is Amber listed in Birds of Conservation Concern in Ireland. However, as it is not included in the EC Wild Birds Directive it is not afforded legal protection at present. The MCZ designation process provides a mechanism to

protect the Rathlin colony at a national level. These features currently occur within the existing SPA/SAC boundary, and as such are already afforded a degree of incidental protection.

The Black guillemot breeding surveys showed a decline in numbers between 2000 (212 adults) and 2013 (129 adults). More survey work is needed to determine if this is a natural feature of the Rathlin population or whether management measures as part of the MCZ process are required to mitigate against the decline. Therefore as the Black guillemot feature in Rathlin pMCZ is currently in unfavourable condition, the Department recommends that the **conservation objective is set to *recover* this feature to favourable condition.**

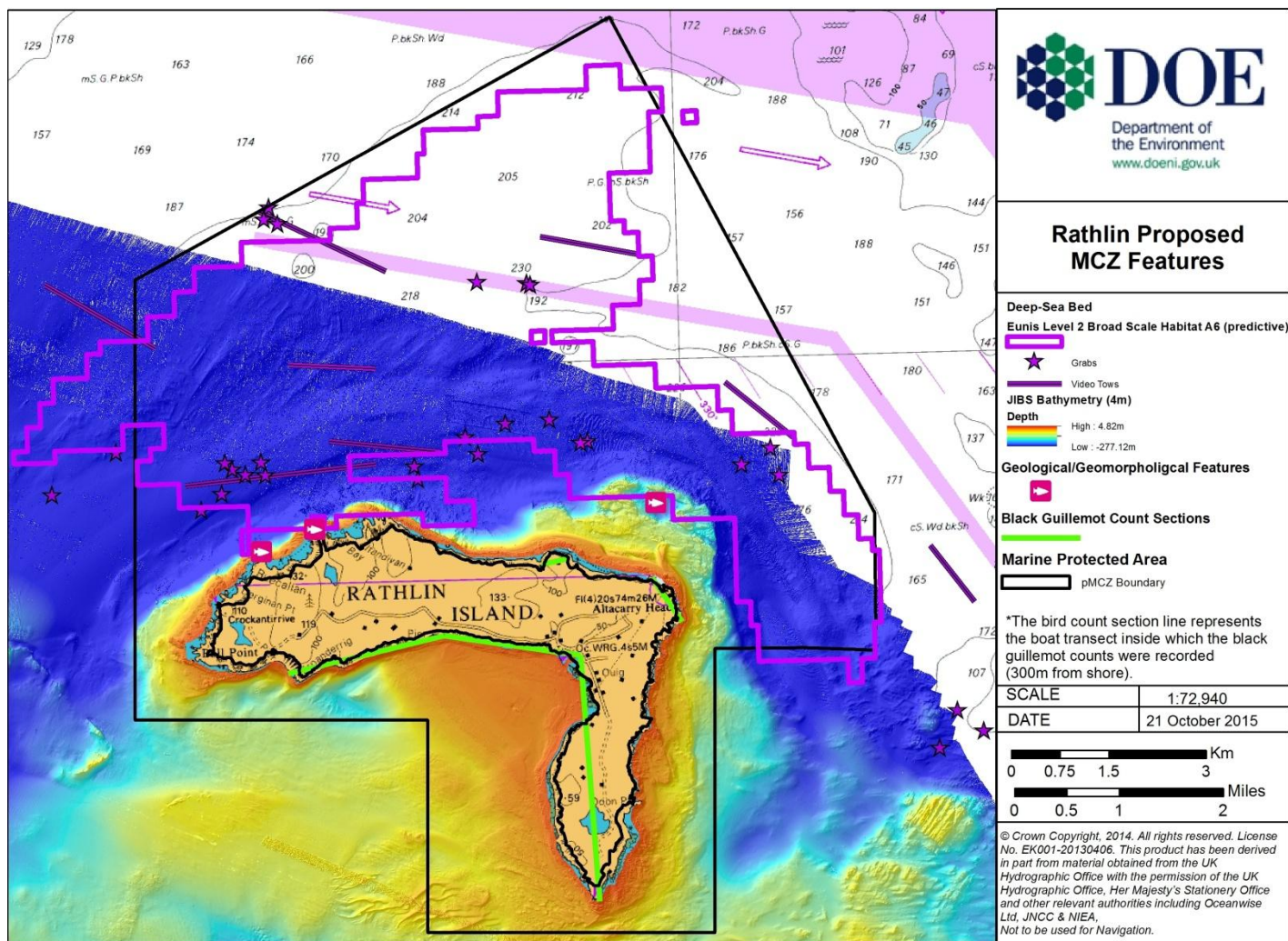


Figure 2 Distribution of the pMCZ features in Rathlin

Geological/Geomorphological Features

The Marine Act (Northern Ireland) 2013 allows for MCZs to be designated for features of Geological and geomorphological interest (hereafter referred to as Geodiversity features). Designation for these types of features is a relatively new concept and as such information on anthropogenic impacts is still being explored.

Analysis of high resolution acoustic survey data (JIBS 2008) yielded previously uncharted seabed features indicating global sea-level change with the retreat of the last ice sheet 20,000 years ago. The paleo-lagoon on the north east corner of Rathlin and the submerged cliffs, gullies and arches along the north shore (Figure 2) are important indicators of landscapes for pre-historic humans and their access to marine and terrestrial resources (<http://www.ulster.ac.uk/es/groups/centre-for-maritime-archaeology/>). These features are already afforded incidental protection as they occur on the Annex I Habitats (Reefs and Submerged and partially submerged sea caves) for which the SAC was designated. The Department considered, however, that it was important to protect these Geodiversity features in their own right through the MCZ designation process. No attempt has been made to identify and catalogue all these features within the pMCZ. Future monitoring and additional survey work will contribute to the growing inventory of these features.

Scottish Natural Heritage (SNH) and the Joint Nature Conservation Committee (JNCC) commissioned a report in 2013 to assess the sensitivity of geodiversity features in Scottish Seas to pressures associated with human activities (http://www.snh.org.uk/pdfs/publications/commissioned_reports/590.pdf). The findings suggest generally that the proposed features have low sensitivity to anthropogenic pressures.

As the Geological/geomorphological features in Rathlin pMCZ are currently in favourable condition, the Department recommends that the **conservation objectives are set to *maintain* these features 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 3-10 have been produced using the feature data (points, polygons and polylines) shown in Figures 2 to illustrate the location of various activities in relation to Rathlin pMCZ.

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.

Activities and Potential Management Options in Rathlin pMCZ

Table 1 lists the activities that have the potential to affect Rathlin 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;
- Increases in turbidity, and
- Introduction and/or increase of mammalian predators.

Table 1 Activities that have the potential to affect Rathlin pMCZ features

Type of activity	Activities
Aquaculture	Kelp cultivation longlines
Fishing	Creels (static gear) Scallop dredging (mobile gear) Angling
Potential Energy production	Tidal Resource Zone Oil and Gas exploration
Infrastructure	Marinas Submarine cable: power
Discharges/waste disposal	Waste water treatment works and outfalls Dredge disposal
Marine traffic	Moorings Boat anchorage Ferry route Shipping/navigation
Tourism and Recreation	SCUBA diving Sailing Kayaking/canoeing Bird watching Recreational fishing and cetacean watching
Scientific and Archaeological activities	Environment/conservation status Research Monitoring Seabed mapping

Aquaculture – Seaweed cultivation

There is one licensed site for the growth and harvesting of kelp on longlines within Church Bay (Figure 3). The plot is 0.07km² and lies in an area utilised by Black guillemot. There is limited information on the impacts of seaweed cultivation on seabirds; however, potential impacts are likely to be similar to those associated with shellfish longlines including **visual disturbance, barrier to movement** and **death or injury by collision**.

A study into the **disturbance** effect of boats on Black guillemots showed that the size, speed and approach distance of boats had an impact on their flushing probability. It was recommended that set-back (buffer) distances from foraging birds were used to reduce these effects (Ronconi and Clair, 2002). Black guillemots are exclusively coastal, and feeding sites are usually associated with kelp beds. If structures, such as longlines, are placed in the foraging area this may cause a **loss or change of habitat** and this is likely to adversely affect the species. Birds may also become entangled in lines. Tolerance to this type of pressure is assessed as medium with medium recovery time for the species to adapt to potential changes in foraging habitat. **Death or injury by collision** with vessels has been reported in low numbers in Greenland (Merkel and Johansen, 2011). Collision usually occurs when the birds are diving or emerging from feeding into the direct path of an oncoming vessel but they will tend to fly away from boats approaching at slower speed.

No aquaculture occurs in the area where the Deep-sea bed and Geodiversity features are located. It is unlikely that aquaculture within the deep sea habitat would have an impact although the Deep-sea bed feature is sensitive to pressures associated with this activity such as organic enrichment, siltation changes and surface abrasion seabed. The Geodiversity features are not sensitive to pressures associated with aquaculture.

It is considered that the risk of not achieving the conservation objectives for the proposed feature is low unless activities associated with seaweed cultivation were to increase in intensity in the future.

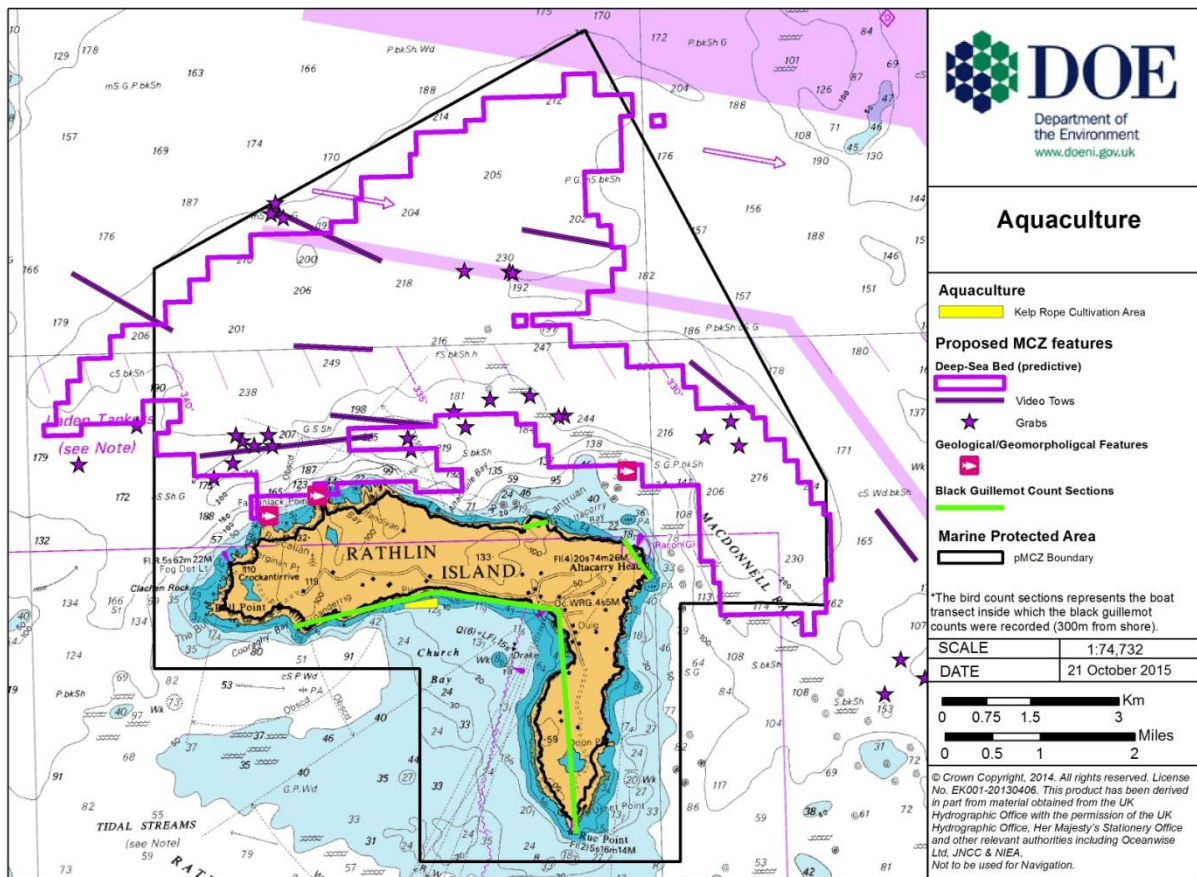


Figure 3 Location of Aquaculture sites in relation to Rathlin pMCZ

Potential Management Options

Management measures are recommended to reduce or limit pressures associated with the kelp cultivation farm activities which could impact Black guillemots. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision particularly during the breeding season (spring).

Management measures are recommended to remove or avoid pressures associated with the expansion of existing aquaculture areas where they would be likely to impact the Black guillemot.

<p>Proposed way forward</p>	<p>The development of new aquaculture operations will require a licence from either DARD or the Department.</p> <p>The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision particularly during the breeding season (spring). This will also apply to other protected seabirds identified in the citation for Rathlin Island SPA.</p>
<p>Relationship with existing Management Options</p>	<p>The Department will also liaise closely with DARD who is responsible for regulating aquaculture (except seaweed cultivation) in Northern Ireland.</p>

Fishing – Scallop dredging, demersal fishing and potting

Figure 4 shows the overlap between commercial fishing using mobile gear (scallop dredging and demersal trawling) and static gear (pots) in the more inshore areas within the pMCZ. This map shows the fisheries interest zones provided by DARD as a coarse indicator of where different types of fishing activity occur. Processed vessel monitoring system (VMS) data identifies where, when and what type of fishing occurred between 2009-2013; however, VMS only relates to vessels of 15m and over. It is important to note that within the SAC boundary, a voluntary ban on the use of mobile gear is in place and has been well respected by local fishermen. DARD has drafted legislation to prohibit mobile gear within the current SAC boundary (within the pMCZ) to be introduced by the end of 2015. DARD is also legislating for a small no take zone in O'Byrne Bay which will also prohibit the use of static gear. The Department may also introduce byelaws to provide protection from other potentially damaging activities such as diving, mooring and anchoring. It is believed that small scale otter board trawling, long lining and drift netting also take place within the pMCZ. Further information is required on location and intensity of this fishing activity before recommending management options.

The strong tidal currents and rocky habitats surrounding the island provide ideal habitats for crustaceans such as Brown crab (*Cancer pagurus*) and lobster (*Homarus gammarus*) which are fished by pots. Although the level of fishing activity over the area where the pMCZ features are located is relatively low it is important to understand the sensitivity of the pMCZ features to this activity in order to meet the conservation objectives.

Black guillemots are moderately sensitive to **disturbance and collision** with boats while diving or emerging from feeding particularly close to their nesting sites. **It is considered that the risk of not achieving the conservation objectives for Black guillemot is low-medium unless activities associated with fishing were to increase in intensity in the future.**

The pMCZ feature Deep-sea bed is not considered to be sensitive to the level of surface abrasion caused by static demersal gear such as pots, and given the depth of this feature (>200m) potting is unlikely to occur here. However, the deep-sea bed habitat is considered to have a high sensitivity to pressures such as **physical changes, species removal, and surface and sub-surface abrasion** from demersal fishing using mobile gear (e.g. trawling and dredging). The degree of sensitivity will depend on the seabed substrate and the associated species. This relationship can be complicated as some habitats (e.g. bedrock) may be less sensitive than others (mud) but their associated species (cold water corals) may be more sensitive to the effects of trawling and dredging. At present VMS data indicates that there is a locally important queen scallop fishery adjacent to the pMCZ so **the risk of not meeting the conservation objective is considered to be low unless the location or intensity of fishing were to change in the future.**

The Geodiversity features are all located within the SAC and, as such, are protected by management measures put in place to protect the SAC features, which include a ban on the use of mobile gear, currently being drafted by DARD.

The Common skate, which has been caught off Rathlin Island, is a large, long-lived species with a low reproductive rate making it especially vulnerable to capture by bottom trawl fisheries (tolerance is moderate). Under the Wildlife Order (Northern Ireland) 1985 (as amended) it is an offence to deliberately target this species and any fish inadvertently caught should be handled in accordance with best practice guidance. The Department has been unable to source site-specific data on the presence of skate within the pMCZ and is therefore not currently in the position to include Common skate as a feature. Should such data become available as a result of pro-active monitoring (Wildlife Order tagging programme) the Department reserves the option to add Common skate at a future date.

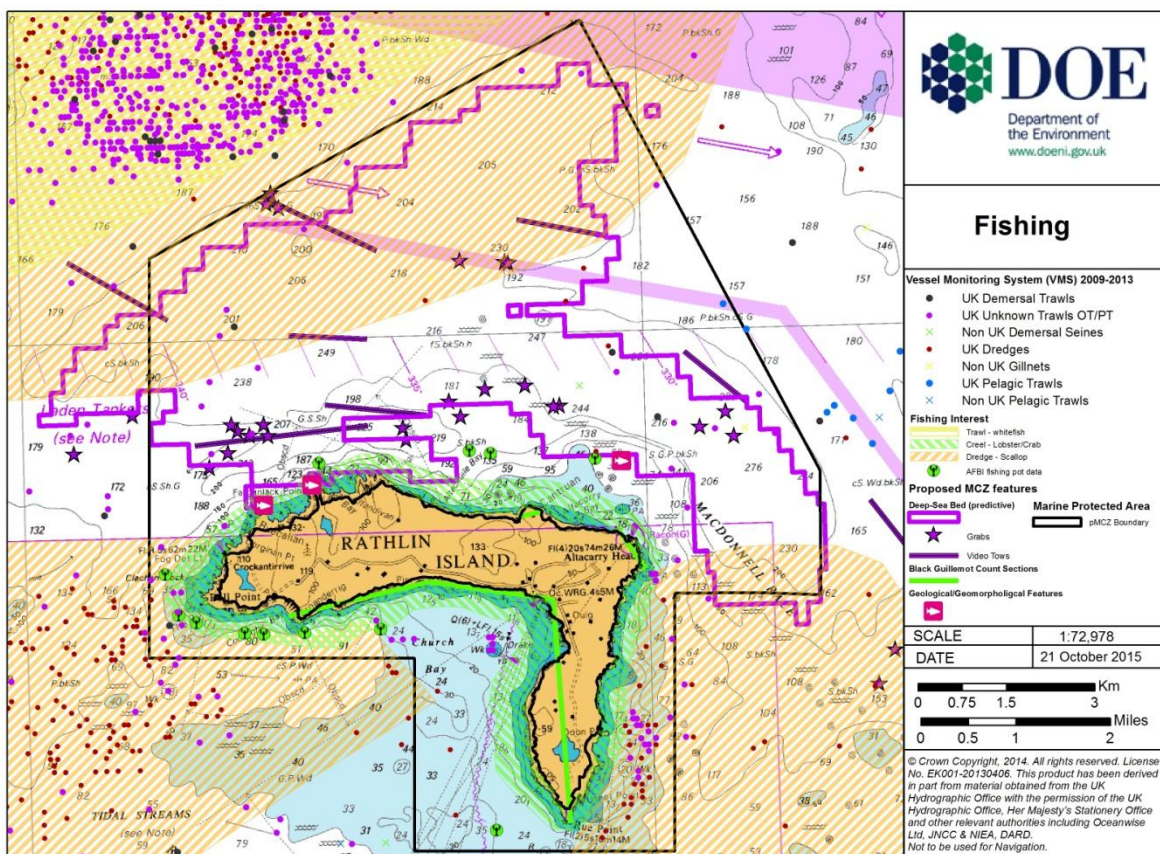


Figure 4 Location of Fisheries activities in relation to Rathlin pMCZ

<p>Potential Management Options</p>	<p>Management measures are recommended to remove or avoid pressures associated with mobile fishing gear in areas where they are likely to impact the pMCZ features.</p> <p>Management measures are recommended to reduce or limit pressures associated with the use of static fishing gear which are likely to impact pMCZ features. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p>
<p>Proposed way forward</p>	<p>DARD will be responsible, through regulations, for the development of fisheries management measures to protect the pMCZ features.</p> <p>The pMCZ features 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.</p>
<p>Relationship with existing Management Options</p>	<p>A voluntary ban on the use of mobile fishing gear within Rathlin Island SAC is currently in place (recommendation from the Rathlin Island EMS Management Scheme). However, legislation has been drafted by DARD to enforce this ban within the SAC boundary in order to protect the habitats and species features at risk of damage or destruction from mobile fishing.</p> <p>The Department will liaise closely with all stakeholders involved in activities which may impact the pMCZ features.</p>

Potential Energy production - *Tidal resource zone and Frontier (oil and gas) exploration license*

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 identified potential impacts of such developments and related mitigating actions to be considered at project development 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 100MW tidal projects at Torr Head and Fair Head respectively. Figure 5 illustrates the overall Tidal Resource Zone and the tidal development sites.

Black guillemots have a medium sensitivity to the following pressures associated with tidal energy production: **Visual disturbance, death or injury by collision, underwater noise** and low sensitivity to **physical changes to the seabed**.

Deep-sea bed is sensitive to the following pressures associated with tidal energy and oil/gas extraction: **physical changes to seabed; sub-surface abrasion, water flow (tidal current) changes** and **synthetic compound contamination**.

Vulnerability assessment showed that the only Geodiversity feature that was at risk from energy production pressures was the paleo-lagoon. According to the assessment the paleo-lagoon was at low risk from renewable energy installations. 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.

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 lie outside the pMCZ boundary. **It is considered that the risk of not meeting the conservation objectives for any of the features is low as the potential tidal developments are unlikely to affect these features, however, the pressures and sensitivities of Rathlin pMCZ will need to be considered.**

Frontier Oil and Gas Exploration Licence

The UK Government's Department of Energy and Climate Change (DECC) has granted Providence Resources Plc a frontier oil and gas exploration license covering 6 offshore blocks in the Rathlin Basin. This will require a well to be drilled within a 6 year period from when the license was granted in December 2011. The Rathlin pMCZ sits within this licensed area.

Black guillemots have a medium sensitivity to the following pressures associated with oil/gas extraction: **Visual disturbance, death or injury by collision, underwater noise** and low sensitivity to **physical changes to the seabed**.

The Deep-sea bed feature has a high vulnerability to activities associated with oil and gas exploration. **It is considered that the risk of not achieving the conservation objectives for the proposed features is high should exploration occur within the pMCZ.**

Vulnerability assessment showed that the only Geodiversity feature that was at risk from energy production pressures was the paleo-lagoon. According to the assessment the paleo-lagoon was at low risk from renewable energy installations. 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.

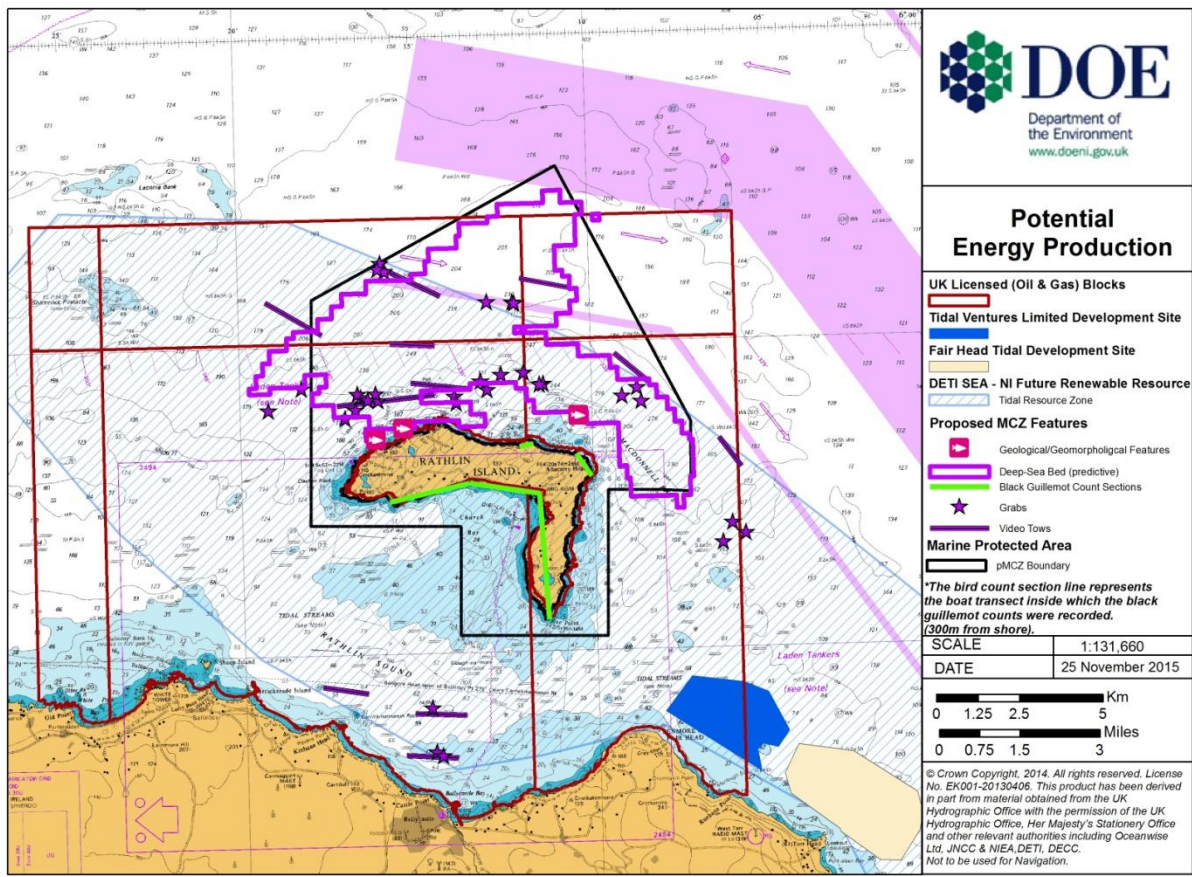


Figure 5 Location of Potential energy production areas in relation to Rathlin pMCZ

<p>Potential Management Options</p>	<p>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 pMCZ features.</p> <p>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 pMCZ features.</p>
<p>Proposed way forward</p>	<p>Any new development for renewable energy production will require a licence from the Department who will consider any potential impacts on the pMCZ.</p>
<p>Relationship with existing Management Options</p> <p>Tidal</p> <p>Oil and Gas</p>	<p>The Department is the marine licensing authority for the NI inshore region.</p> <p>DETI is the consenting authority for the construction and operation of electricity generation installations.</p> <p>DECC administers marine environmental regulations associated with oil and gas exploration and production and</p>

	<p>the decommissioning of marine installations, wells, pipelines and associated infrastructure in the UK marine area (excluding internal waters).</p> <p>The Crown Estate has an interest as the seabed and subsurface owner and leasing authority.</p>
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Infrastructure – Harbour/marina, submarine power cable

While there is no real industrial activity around Rathlin Island, there is a busy marina in Church Bay and a submarine power cable (running from Rathlin to Ballycastle), both of which fall within the breeding and foraging areas where Black guillemot are found (Figure 6). It is also a busy ferry harbour which is due to be extended to accommodate a larger ferry.

Construction or maintenance activities, within the marina, or of the submarine cable have the potential to cause disturbance to breeding and foraging behaviours of Black guillemot nearby.

The main pressures linked to infrastructure operations in the area are: **disturbance**, **death/injury from collision** with vessels, **non-synthetic compound contamination** (incl. heavy metals, hydrocarbons, produced water), **physical change** (to another seabed type), **physical removal** (extraction of substratum), **siltation changes** (low), **sub-surface abrasion/penetration**, **synthetic compound contamination** (incl. pesticides, anti-foulants, pharmaceuticals), **water clarity changes**, **water flow** (tidal current) changes – locally and wave exposure changes – locally.

Disturbance and **death/injury from collision** with vessels while foraging are the most likely risks to the Black guillemot population which need to be considered to ensure the conservation objectives are met.

Deep-sea bed and Geodiversity features are unlikely to be adversely affected by either the marina or submarine power cable activities due to their location; therefore there is no risk to the achievement of the conservation objectives.

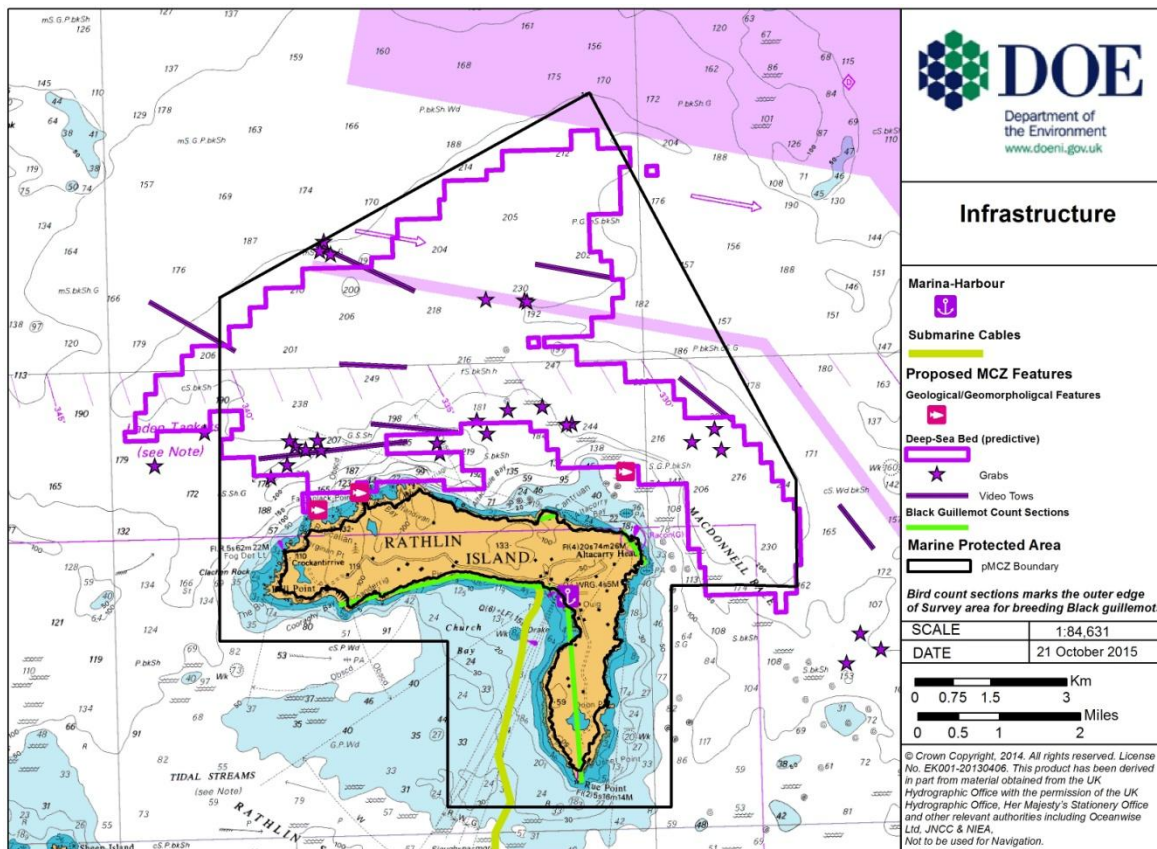


Figure 6 Location of Infrastructure in relation to Rathlin pMCZ

<p>Potential Management Options</p>	<p>Management measures are recommended to reduce or limit pressures associated with any proposed expansion of the existing marina where it is likely to impact the breeding Black guillemots. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p> <p>Management measures are recommended to reduce or limit pressures associated with maintenance work on the submarine cable where it is likely to impact the breeding Black guillemots. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p>
<p>Proposed way forward</p>	<p>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.</p>

Relationship with existing Management Options

Causeway Coast and Glens Borough Council has responsibility for Rathlin marina and harbour.

Applications for expansion or work in this area would be subject to a Habitats Regulations Assessment if it is capable of affecting the Rathlin Island SAC/SPA.

Discharges/waste disposal – Wastewater treatment works and outfalls, dredge disposal

Rathlin Island has one wastewater treatment facility which discharges through an outfall approximately 300m out to sea in the Church Bay area (Figure 9). This facility was upgraded in March 2013. Its new design has flexible capacity to meet the changing needs between winter and summer and its treatment processes are subject to the conditions of a discharge consent issued by the Department.

There is a dredge disposal site to the south of Rathlin Island but this does not lie within the pMCZ boundary (Figure 7). This site is licensed by the Department for the disposal of dredge material from Rathlin harbour.

Deep-sea bed is unlikely to be affected by either the wastewater or dredge disposal activities due to the latter's location off the south of Rathlin Island. An assessment of the Geodiversity features showed that the paleo-lagoon was the only feature that was at risk (low) of damage from waste disposal. There is a dredge disposal site to the south of Rathlin but it falls well beyond the zone of influence (1km) and as the Island itself sits between it and the paleo-lagoon, the latter is not considered to be at risk.

Black guillemots forage in the sheltered inlets and bays close to the Rathlin shore including Church Bay. Pressures associated with wastewater discharge can include **Nitrogen and phosphorous enrichment**, which could cause changes such as decreased visibility for foraging birds from plankton blooms, or increased growth of filamentous algae. Tolerance is assessed as high with medium recoverability.

Although the dredge disposal site lies outside the pMCZ, pressures associated with dredging activities in Rathlin harbour may adversely affect Black guillemot. The species is sensitive to **visual disturbance, death /injury from collision** with vessels and **synthetic and non-synthetic compound contamination**. These pressures need to be considered to ensure the conservation objective for Black guillemot can be met. **It is considered that the risk of not achieving the conservation objectives is moderate without some management in place for operations associated with dredging activities.**

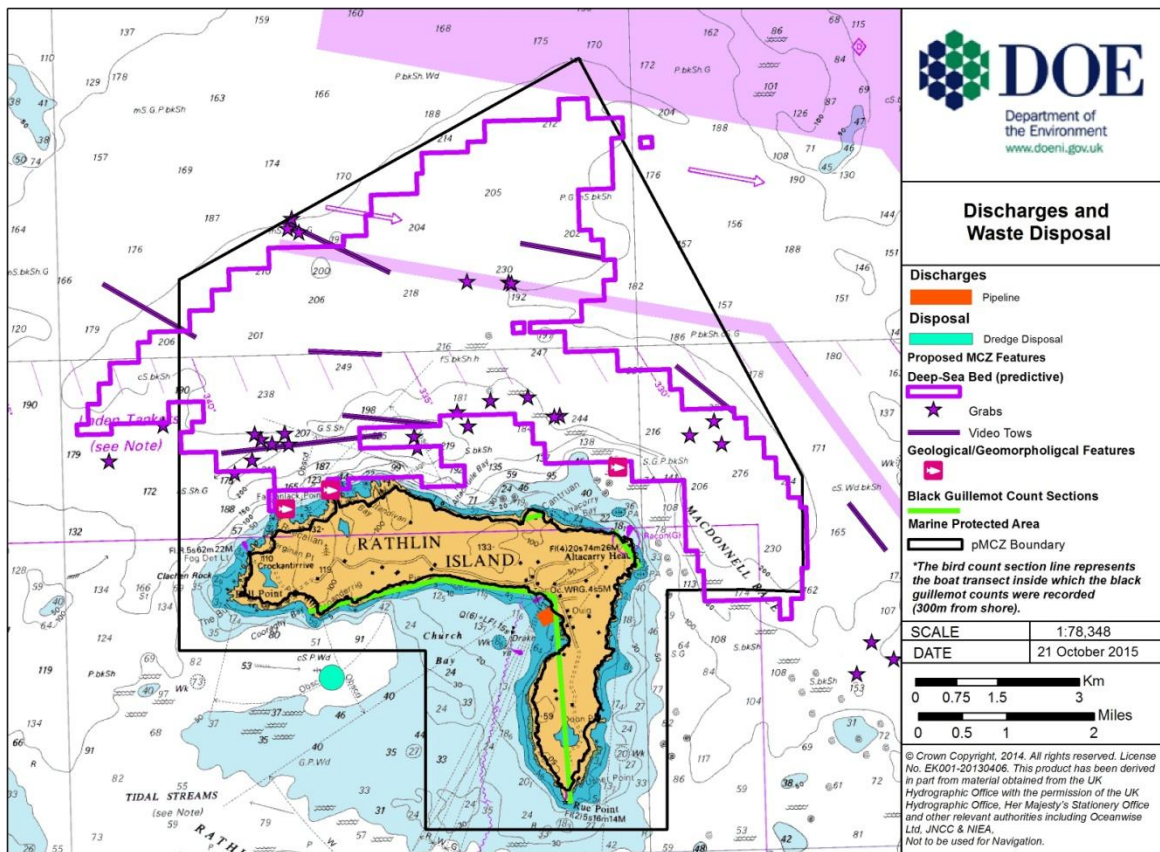


Figure 7 Location of Waste water discharge and Dredge disposal sites in relation to Rathlin pMCZ

<p>Potential Management Options</p>	<p>Management measures are recommended to reduce or limit pressures associated with the development of new discharge/waste/dredge disposal sites as well as the expansion or relocation of the existing dredge disposal ground where they are likely to impact the pMCZ features.</p>
<p>Proposed way forward</p>	<p>Any changes to the current discharge/waste disposal sites will be carried out by Northern Ireland Water (NIW) in consultation with the Department to determine any impacts to the pMCZ.</p>
<p>Relationship with existing Management Options</p>	<p>NIW is responsible for wastewater treatment works. Water discharges are governed by requirements in European legislation (The Urban Waste Water Treatment Directive (91/271/EEC) and Nitrates Directive (91/676/EEC).</p> <p>The Department is responsible for licensing dredging and disposal activities in the Northern Ireland inshore region.</p>

	<p>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.</p>
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Marine traffic (commercial and recreational) – Moorings and anchoring, ferry route and shipping/navigation

Two ferries, a high speed passenger catamaran and a slower vehicle displacement ferry, run between Rathlin and Ballycastle and these can sail up to 10 crossings a day in their busy summer season. There is also a shallow (approximately 1.2m at low water) anchorage area just inside the breakwater wall. The ferries travel through an area where Black guillemots forage and the birds are at risk of **visual disturbance** or **death/injury from collision** with marine traffic. Boats should also avoid anchoring adjacent to Black guillemot nesting sites. However, the ferries appear to follow a narrow navigational route in the area frequented by the birds which helps to minimise the likelihood of these pressures occurring and will aid in the achievement of the conservation objectives.

To the north and northeast of the Island there is an International Maritime Organisation (IMO) Traffic Separation Scheme for vessels transiting the North Channel. The Marine Maritime Organisation (MMO) carried out a study examining shipping transit data around the UK (MMO, 2014); Figure 10 represents the density of vessels utilising the area designated by the scheme during a one week period in September 2012. Figure 8 also illustrates the transit lines of the ferries between Rathlin and Ballycastle during this same period.

Deep-sea bed habitat is sensitive to **surface and sub-surface abrasion** associated with shipping (from anchoring or mooring). **However, the achievement of the conservation objectives is not at risk due to the depth (>200m) of this feature and the fact that vessels are transiting through the area and so should not interact with the Deep-sea bed feature.**

Geodiversity features are unlikely to be affected by marine traffic due to their depth and location.

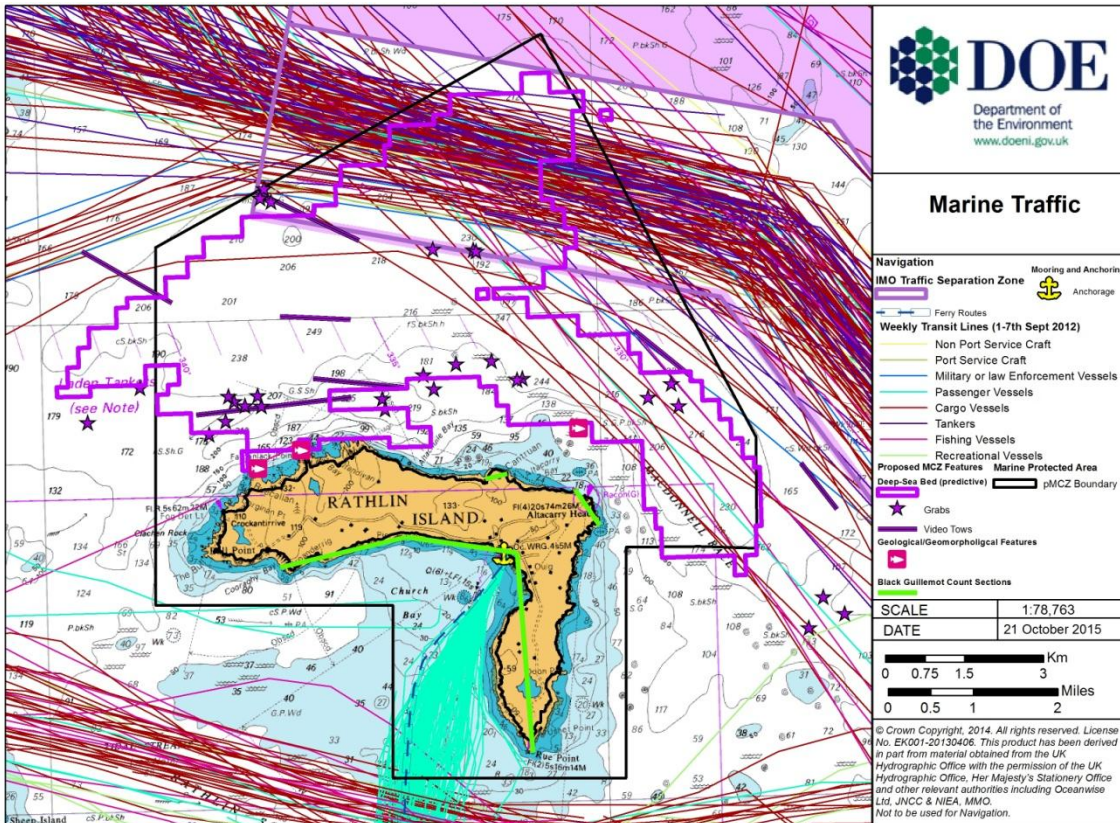


Figure 8 Location of Marine traffic in relation to Rathlin pMCZ

<p>Potential Management Options</p>	<p>Management measures are recommended to reduce or limit pressures associated with the ferry route inside the pMCZ boundary where they are likely to impact foraging Black guillemot. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p> <p>Management measures are recommended to reduce pressures associated with current and future anchoring and moorings where they are likely to impact Black guillemot.</p> <p>No additional management is required for the shipping industry/marine traffic.</p>
<p>Proposed way forward</p>	<p>The Department will continue to engage with those stakeholders involved in marine traffic within or adjacent to the pMCZ to develop appropriate management measures. The Department may propose a speed limit zone within the area to minimise the likelihood of disturbance and</p>

	<p>death/injury from collision with seabirds particularly during the breeding season (spring).</p>
<p>Relationship with existing Management Options</p>	<p>The Shipping industry is primarily regulated by the International Maritime Organization (IMO). The Maritime and Coastguard Agency (MCA) works closely with national and international partners to promote the safe construction, operation and navigation of ships.</p> <p>The Department will continue to work with the Department for Regional Development (DRD), who is planning to replace the current vehicle ferry, to ensure that the proposed new ferry does not impact on the pMCZ or SAC/SPA features.</p> <p>Permanent moorings are licensed by the Crown Estate, as owners of the seabed. Any new moorings will require a marine licence from the Department.</p>

Tourism and Recreation– *Bird watching, sailing, kayaking/canoeing, SCUBA diving and recreational sea angling*

Rathlin is a very popular destination for tourism due to its unique location and stunning sea cliffs which host a wide variety of seabirds including puffins, gannets and gulls. The RSPB Seabird Centre at the West Light provides an ideal viewpoint where visitors can learn about the birds found on the island. Rathlin also attracts sailing, kayaking and canoeing, with a canoe coastal trail around the island. Diving is a popular activity, particularly on the wrecks found around the island (Figure 9). Charter boats are also available from Ballycastle for fishing, seal watching, cetacean (whales and dolphins) watching and diving excursions in the seas around Rathlin.

Black guillemots are sensitive to pressures such as **visual disturbance** when foraging, **death /injury from collision** with marine vessels. A study into the **disturbance** effect of boats on Black Guillemots showed that the size, speed and approach distance of boats had an impact on their flushing probability (Ronconi & Clair, 2002). It was recommended that set-back (buffer) distances from foraging birds were used to reduce these effects. Boats should also avoid anchoring adjacent to Black guillemot nesting sites. The Department will consider installing information panels at Ballycastle and Rathlin Harbours explaining the importance of reducing speed where foraging or feeding takes place, especially during breeding season. **It is considered that the risk of not achieving the conservation objectives for Black guillemot is moderate without management in place to reduce adverse effects from boating activities.**

Deep-sea bed habitat is sensitive to pressures such as **surface and sub-surface abrasion** which can be associated with tourism and recreation (from anchoring and mooring). **The risk of not achieving the conservation objectives for the Deep-sea bed feature is low due to the depth of the feature (>200m) and that tourism and recreational vessels are unlikely to interact with this feature.**

Geodiversity features are unlikely to be affected by recreational activities due to their depth and location.

Rathlin is a very popular location for SCUBA diving due to its clear waters, rich unique biodiversity found on the underwater cliffs and drop offs and proliferation of shipwrecks. Diving takes place from a range of marine vessels so impacts to the pMCZ features are similar to those pressures exerted by other marine traffic. Due to the depth of the Deep-sea bed feature diving does not pose a risk to the achievement of the conservation objectives. Dive-boats should be discouraged from anchoring on sensitive reefs. A diving code of practice is currently being drafted as part of the EMS Management Scheme and will be brought to the attention of all visiting divers. This code of practice will also explain the

importance of reducing speed where Black guillemots are feeding or foraging during breeding season.

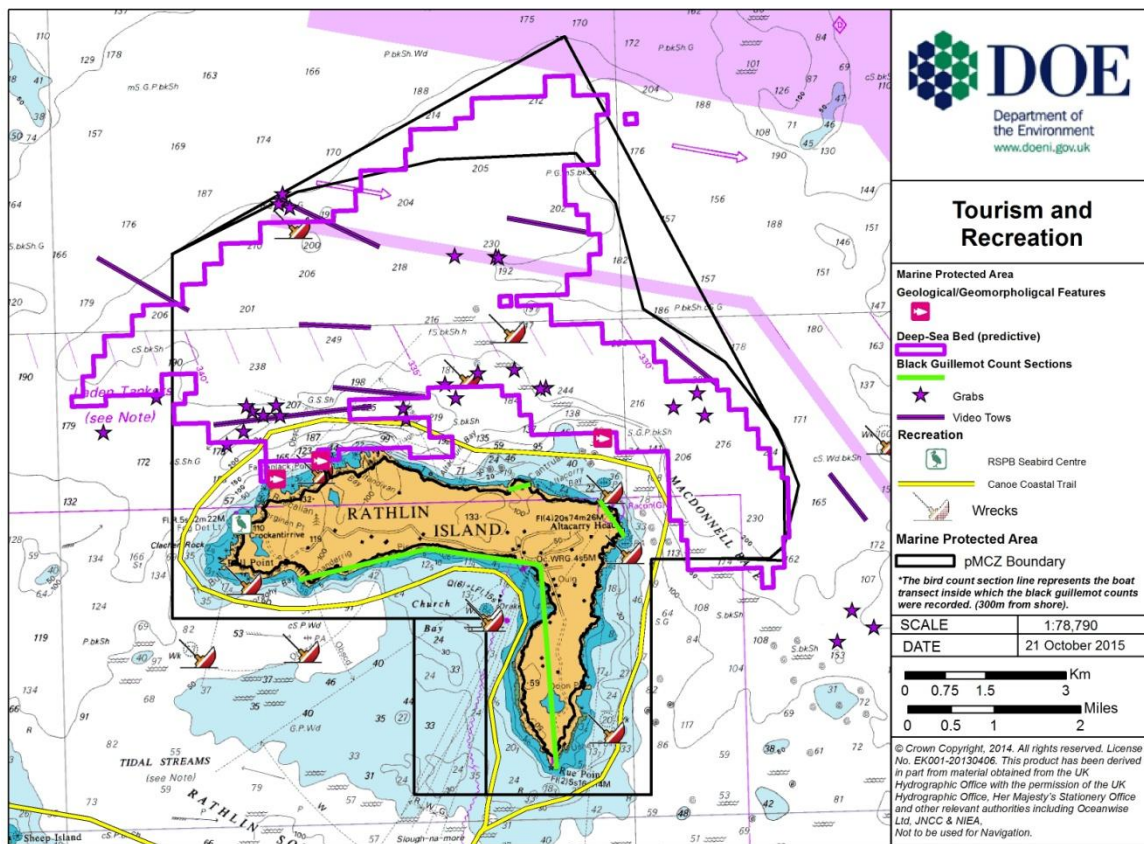


Figure 9 Location of Tourism and Recreational activities in relation to Rathlin pMCZ

<p>Potential Management Options</p>	<p>Management measures are recommended to reduce or limit pressures associated with tourism and recreational activities where they are likely to impact foraging Black guillemot. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p>
<p>Proposed way forward</p>	<p>The Department will continue to engage with those stakeholders involved in recreation and tourism within or adjacent to the pMCZ to develop appropriate management measures.</p>

Relationship with existing Management Options

A North Coast Marine Ranger is in place and is responsible for raising awareness of the protected features and activities that can impact them. The Ranger is also responsible for monitoring activities on the Island. At present the Ranger is only responsible for the SAC/SPA but in the future this role will be expanded to cover the pMCZ features.

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.

Scientific and Archaeological activities – *Research and monitoring*

Rathlin Island has been the subject of numerous intertidal and subtidal surveys by the Department over the last number of years (Figure 10). These surveys were carried out to meet the Department's marine monitoring and reporting requirements for the following:

- Water Framework Directive (WFD)
- Habitats Directive - Special Area of Conservation (SAC)
- Wild Birds Directive -Special Protection Area (SPA)
- Environment Order – Area of Special Scientific Interest (ASSI)

The Joint Agency Monitoring Programme (Agri-food and Biosciences Institute (AFBI), Loughs Agency and the Department) delivers spatial surveys along Northern Ireland's coast using environmental monitoring systems or moored monitoring stations/points. None of the stations lie within the Rathlin pMCZ boundary.

AFBI was commissioned by the Department to carry out seabed surveys within Rathlin pMCZ; the most recent survey work in the north of the pMCZ describes the subtidal benthic communities and physical environment of the seabed for the MCZ designation programme. AFBI, on behalf of DARD, has also produced a detailed Habitats Regulations Assessment (HRA) of the impact of mobile and static fishing gears on European marine features for Rathlin Island SAC/SPA.

Additionally, AFBI carries out Queen Scallop surveys for stock assessment to the north-west of Rathlin, these survey sites lie outside the pMCZ boundary.

The Department, 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. These surveys have also provided underpinning evidence of the presence of Geodiversity features including submerged vertical cliffs, gullies and archways.

The Department is responsible for periodic grab surveys, disposal sites surveys and seaweed sampling as part of the Marine Pollution Monitoring Programme under the Water Framework Directive (WFD).

There are a number of subtidal cultural heritage assets falling within Rathlin pMCZ including 82 recorded wrecks and a further 60 possible anthropogenic anomalies identified through analysis of the JIBS data. Church Bay has also been identified as a zone of archaeological potential regarding submerged prehistoric archaeology. However, the potential management options for the proposed designated features appear unlikely to impact upon legitimate archaeological activities in the pMCZ.

The Department has commissioned geophysical surveys and diving operations targeting underwater cultural heritage (Quinn *et al.*, 2000; Quinn, *et al.*, 2002; Quinn, 2007). This included archaeological analysis of the Joint Irish Bathymetric Survey data (JIBS) (Plets *et al.*, 2011; Westley *et al.*, 2011); an undesignated site assessment of HMS Drake (Wessex

Archaeology 2006) and a maritime cultural landscape study of Rathlin Island (Forsythe & McConkey, 2012).

Scientific and Archaeological activities may have the potential to cause the deterioration of pMCZ features through **direct alteration, removal or manipulation of the species associated with the biotope**. Black guillemots are sensitive to pressures such as **visual disturbance** when foraging, **death /injury from collision** with marine vessels. Deep-sea bed and Geodiversity features are not considered at risk of damage from pressures associated with Scientific and Archaeological activities.

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 low 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.

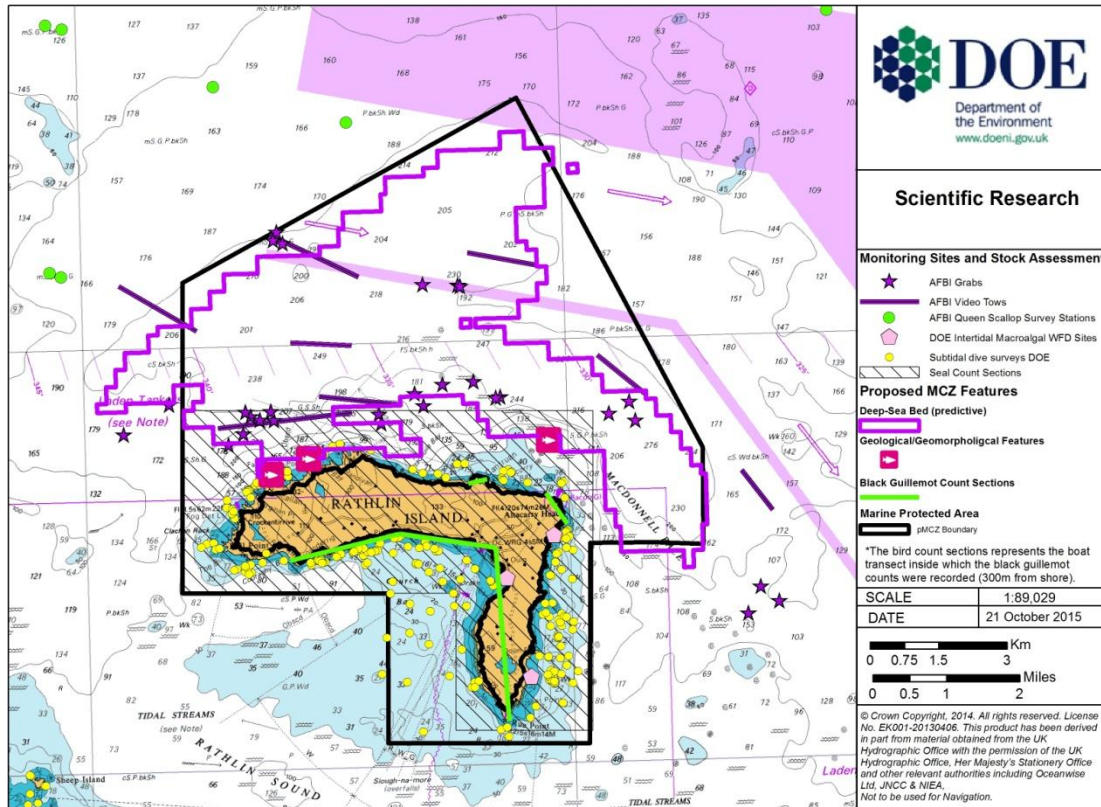


Figure 10 Location of Scientific research/monitoring in relation to Rathlin pMCZ

<p>Potential Management Options</p>	<p>No additional management is required as Scientific and Archaeological activities are carried out following strict guidelines enforcing non-destructive sampling methods.</p>
<p>Proposed way forward</p>	<p>The Deep-sea bed feature will be surveyed on a 6 yearly rolling cycle to monitor biotope distributions, species abundances and condition of the Geodiversity features. This will determine whether the conservation objectives are being achieved.</p> <p>Black guillemot will be surveyed following the Seabird Monitoring Programme methodology using five-year running means.</p> <p>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.</p>

Relationship with existing Management Options

The Department and AFBI carry out monitoring through joint partnerships and specifically commissioned work to meet the Department's legislative commitments (Marine Strategy Framework Directive; Marine and Coastal Access Act 2009; The Marine Act (Northern Ireland) 2013; OSPAR).

Summary of potential Management Options

<p>Aquaculture: <i>kelp cultivation longlines</i></p>	<p>Management measures are recommended to reduce or limit pressures associated with the kelp cultivation farm activities which could impact Black guillemots. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision particularly during the breeding season (spring).</p> <p>Management measures are recommended to remove or avoid pressures associated with the expansion of existing aquaculture areas where they would be likely to impact the Black guillemot.</p>
<p>Fishing: <i>mobile gear (scallop dredging and trawling)</i></p> <p><i>Static gear (pots)</i></p>	<p>Management measures are recommended to remove or avoid pressures associated with mobile fishing gear in areas where they are likely to impact the pMCZ features.</p> <p>Management measures are recommended to reduce or limit pressures associated with the use of static fishing gear which are likely to impact pMCZ features. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p>
<p>Potential Energy Production: <i>Tidal Resource Zone</i></p> <p><i>Frontier (oil and gas) exploration Licence</i></p>	<p>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 pMCZ features.</p> <p>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 pMCZ features.</p>
<p>Infrastructure: <i>marina,</i></p>	<p>Management measures are recommended to reduce or limit pressures associated with any proposed expansion of the existing marina where it is likely to impact the breeding Black guillemots. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds</p>

<p><i>Submarine power cable</i></p>	<p>particularly during the breeding season (spring).</p> <p>Management measures are recommended to reduce or limit pressures associated with maintenance work on the submarine cable where it is likely to impact the breeding Black guillemots. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p>
<p>Discharges/Waste disposal: <i>Waste water treatment works & outfalls and dredge spoil disposal.</i></p>	<p>Management measures are recommended to reduce or limit pressures associated with the development of new discharge/waste/dredge disposal sites as well as the expansion or relocation of the existing dredge disposal ground where they are likely to impact the pMCZ features.</p>
<p>Marine traffic: <i>Ferry route,</i></p> <p><i>Shipping/Navigation.</i></p>	<p>Management measures are recommended to reduce or limit pressures associated with the ferry route inside the pMCZ boundary where they are likely to impact foraging Black guillemot. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p> <p>Management measures are recommended to reduce pressures associated with current and future anchoring and moorings where they are likely to impact Black guillemot.</p> <p>No additional management is required for the shipping industry/marine traffic.</p>
<p>Tourism and Recreation: <i>Bird watching, sailing, kayaking/canoeing, SCUBA diving and recreational sea angling.</i></p>	<p>Management measures are recommended to reduce or limit pressures associated with tourism and recreational activities where they are likely to impact foraging Black guillemot. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury from collision with seabirds particularly during the breeding season (spring).</p>
<p>Scientific and Archaeological activities: <i>Research and monitoring</i></p>	<p>No additional management is required as Scientific and Archaeological activities are carried out following strict guidelines enforcing non-destructive sampling methods.</p>
<p>²Predation from mammalian predators</p>	<p>Management measures are recommended to remove or avoid predators which have a high likelihood of impacting breeding Black guillemots.</p>

² Predation and Rathlin Island European Marine Site Management Scheme has been discussed on page 9

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ANNEX I

Conservation Objectives for Rathlin pMCZ

In general the conservation objectives for Rathlin 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 objectives have been drafted for the pMCZ features of Deep-sea bed and Black guillemot but particular reference is given to associated community features of the former to which the conservation objectives also apply. 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 (or restored to) favourable condition, the condition in which the habitat or species is capable of sustaining itself on a long-term basis.

Conservation Objective 1

To maintain¹ the Deep Seabed in *favourable condition*, taking account of natural change such that:

- The natural environmental quality² is maintained
- The natural environmental processes³ are maintained
- The extent⁴, diversity⁵, community structure⁷ and typical species⁸ representative of the habitat are maintained.

Particular reference is given to:

Deep sea gravel and sand communities

Conservation Objective 2

To recover¹ the Black Guillemot in *favourable condition*, taking account of natural change such that:

- The distribution of the species within the site are maintained

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 refer 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 Black guillemot a survey of its distribution 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 (or are restored to) a favourable condition which can be said to occur when the target for each attribute is reached.

Table 1 Favourable Condition table for Rathlin 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
Deep-sea beds		Extent	Area (ha) of the Deep-sea bed measured once during reporting cycle.	No decrease in extent from an established baseline subject to natural change.	
	Gravel and sand communities	Characteristic biotopes at sites chosen so as to provide some indication of the distribution and extent of the sub-feature.	Presence and abundance of selected biotopes at selected sites measured once during reporting cycle.	Presence and abundance of selected biotopes 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 the selected communities.
	Mixed sediment communities				
	Mud communities				
Bioherm communities	Species composition of characteristic biotopes at	Species composition of selected biotopes measured once during the reporting cycle.	Composite species of selected biotopes should not deviate significantly from the	Species composition is an important contributor to the structure of the biotopes within the sub-feature. The presence	

Feature	Sub-Feature	Attribute	Measure	Target	Comments
		monitoring sites.		established baseline subject to natural change.	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 the selected communities.
Black guillemot		Population	Bird numbers – survey as per Seabird 2000 methodology (see Gilbert <i>et al.</i> , 2008) and calculate new population mean.	No significant decrease in population against national trends.	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
Geodiversity (Geological/geomorphological features)		Extent and quality	Extent and quality of feature	Maintain the extent and quality of the feature as at time of designation.	The site should be monitored using the best available techniques.

ANNEX II

Priority Marine Features (PMFs)

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

PMF Habitats	
Deep Seabed	
Fragile Sponge and anthozoan communities on subtidal rocky habitats	
Littoral Chalk Communities	
Maerl Beds	
Subtidal Chalk	
Intertidal Under-boulder Communities	
Littoral Chalk communities	
Low and Limited Mobility Species	
Common Name	Latin name
Tassel weed	<i>Carpomitra costata</i>
Brown seaweed	<i>Desmarestia dresnayi</i>
Spindle weed	<i>Atractophora hypenoides</i>
Red seaweed	<i>Cruoria cruoriiformis</i>
Red seaweed	<i>Schmitzia hiscockiana</i>
Red seaweed	<i>Stenogramme interrupta</i>
An erect bryozoan	<i>Bugula turbinata</i>
Potato crisp bryozoan	<i>Pentapora foliacea</i>
Soft coral	<i>Alcyonium hibernicum</i>
Burrowing anemone	<i>Arachnanthus sarsi</i>
Emperor/Imperial anemone	<i>Capnea sanguinea</i>
Cup coral	<i>Caryophyllia inornata</i>
Cup coral	<i>Caryophyllia smithii</i>
Hydroid	<i>Diphasia alata</i>
Hydroid	<i>Diphasia nigra</i>
Burrowing anemone	<i>Edwardsia timida</i>
Hydroid	<i>Halecium plumosum</i>
Stalked jellyfish	<i>Haliclystus auricular</i>
Hydroid	<i>Lytocarpia myriophyllum</i>
Anemone	<i>Parazoanthus anguicomus</i>
Yellow trumpet anemone	<i>Parazoanthus axinellae</i>
Hydroid	<i>Polyplumaria flabellata</i>
Anemone	<i>Stomphia coccinea</i>
Hydroid	<i>Tamarisca tamarisca</i>
Circular crab	<i>Atelecyclus rotundatus</i>

Hermit crab	<i>Cestopagurus timidus</i>
Masked crab	<i>Corystes cassivelaunus</i>
European lobster	<i>Homarus gammarus</i>
Spider crab	<i>Inachus leptochirus</i>
Squat lobster	<i>Munida rugosa</i>
Spiny lobster/Crawfish	<i>Palinurus elephas</i>
Goosefoot starfish	<i>Anseropoda placenta</i>
Feather star	<i>Antedon petasus</i>
Starfish	<i>Astropecten irregularis</i>
Starfish	<i>Leptasterias (Leptasterias) muelleri</i>
Cushion Star	<i>Porania pulvillus</i>
Sunstar	<i>Solaster endeca</i>
Queen Scallop	<i>Aequipecten opercularis</i>
Nudibranch	<i>Cumanotus beaumonti</i>
Nudibranch	<i>Cuthona concinna</i>
Egg cowrie	<i>Erato volute</i>
King scallop	<i>Pecten maximus</i>
Sponge	<i>Antho (Acarnia) brattegardii</i>
Sponge	<i>Axinella damicornis</i>
Sponge	<i>Axinella dissimilis</i>
Sponge	<i>Clathria (Clathria) barleei</i>
Sponge	<i>Hymedesmia (Hymedesmia) cohesibacilla</i>
Sponge	<i>Hymedesmia (Hymedesmia) rathlinia</i>
Sponge	<i>Hymenhabdia typica</i>
Sponge	<i>Iophon hyndmani</i>
Sponge	<i>Lissodendoryx (Ectyodoryx) jenjonesae</i>
Sponge	<i>Myxilla (Myxilla) rosacea</i>
Sponge	<i>Plocamiancora arndti</i>
Sponge	<i>Pyura microcosmus</i>
Sponge	<i>Spanioplou armaturum</i>
Sponge	<i>Spongionella pulchella</i>
Sponge	<i>Stelletta grubii</i>
Sponge	<i>Stryphnus ponderosus</i>
Sponge	<i>Tethya hibernica</i>
Sea squirt	<i>Archidistoma aggregatum</i>
Sea squirt	<i>Boltenia echinata</i>
Football sea squirt	<i>Diazona violacea</i>
Pinhead sea squirt	<i>Pycnoclavella stolonialis</i>
Sea squirt	<i>Synoicum incrustatum</i>

Highly Mobile Species	
Common Name	Latin name
Harbour Porpoise	<i>Phocoena phocoena</i>
Bottle-nosed dolphin	<i>Tursiops truncatus</i>
Basking Shark	<i>Cetorhinus maximus</i>
Lesser spotted dogfish	<i>Scyliorhinus canicula</i>
Nursehound	<i>Scyliorhinus stellaris</i>
Spurdog	<i>Squalus acanthias</i>
Cod	<i>Gadus morhua</i>
Angler fish	<i>Lophius piscatorius</i>
Ling	<i>Molva molva</i>
Plaice	<i>Pleuronectes platessa</i>
Sole	<i>Solea solea</i>
Grey seal	<i>Halichoerus grypus</i>
Common seal	<i>Phoca vitulina</i>
European Shag	<i>Phalacrocorax aristotelis</i>



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Photos represent PMF features found
throughout Northern Ireland Inshore Region

