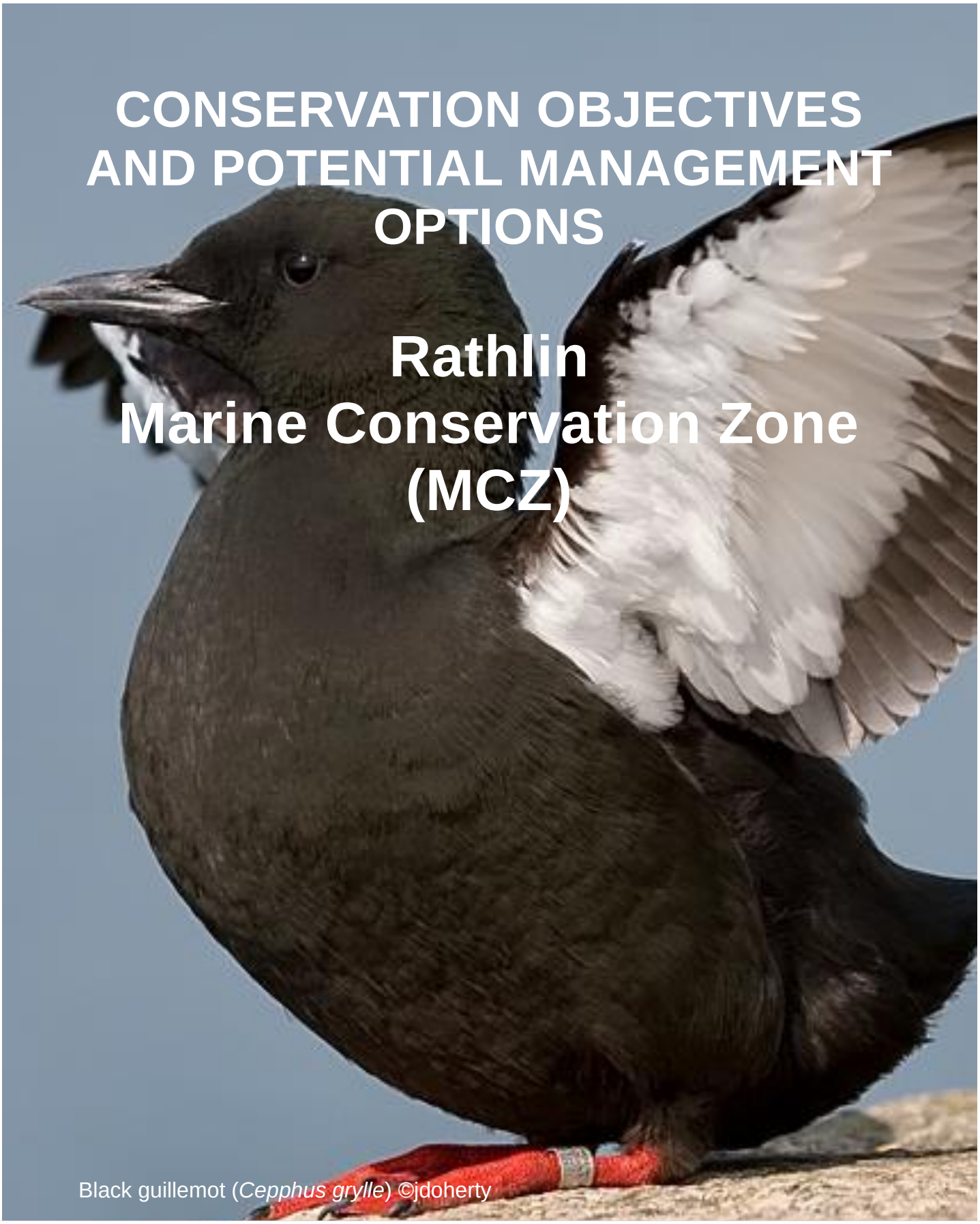
CONSERVATION OBJECTIVES AND POTENTIAL MANAGEMENT OPTIONS

Rathlin Marine Conservation Zone (MCZ)



Black guillemot (*Cepphus grylle*) ©jdoherty

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Summary

This document provides information on the various uses and activities occurring in Rathlin Marine Conservation Zone (MCZ) and surrounding area. The document has been produced to advise stakeholders about the activities that may pose a threat to the designated features, the potential management options for these activities and, their compatibility with conservation objectives of the protected features.

The information is organised by the type of activity, and describes briefly potential impacts on features and potential management options. The grouping of activities was initially based on the standardised UK pressures-activity matrix[1], as developed by JNCC (2013) which classed similar activities that exerted similar pressures together, for example, anchoring by commercial and recreational vessels. Since the public consultation, a new Pressures-Activities Database (PAD) has been developed by Cefas and APBmer (2015). This database and the list of activities are currently under review by JNCC in conjunction with each country agency. The Department has used this database and the improved activities list along with a revised methodology (Marine Evidence based Sensitivity Assessment, MarESA, developed by JNCC and Natural England) to review the vulnerability assessments for the MCZs (where applicable). Detailed management plans will be developed post designation based on this document, the features vulnerability assessment and the conservation objectives of the MCZ features. The management options will only include activities considered capable of affecting the features of the MCZ based on the risk of damage assessment. New management options will need to be harmonised with any existing management developed for Rathlin Island SAC/SPA.

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 MCZ.

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

Additional information on Rathlin MCZ and the MCZ process includes:

- Guidance on selection and designation of Marine Conservation Zones

[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

(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 Marine Conservation Zone (MCZ)
- Data Confidence Assessment for Rathlin Marine Conservation Zone (MCZ)
- Site Summary Document for Rathlin Marine Conservation Zone (MCZ)

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

Biotope – The region of habitat associated with a particular ecological community

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.

DAERA – Department of Agriculture, Environment and Rural Affairs (also referred to as the Department in the text)

DETI – Department of Enterprise, Trade and Investment (now part of the Department for the Economy)

DfC – Department for Communities

DfE – Department for the Economy

DfI – Department for Infrastructure

DOE – Department of the Environment (now lies within DAERA)

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).

EMS – European Marine Site

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). This zone is dominated by erect algae, typically Kelp species.

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 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

MCZ Feature – Marine Conservation Zone feature(s) that underpins the MCZ designation

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).

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

SAC – Special Area of Conservation, designated under the Habitats Directive

SPA – Special Protection Area, designated under the Birds Directive

Spyball – Underwater drop camera operated by crew aboard a vessel used to study submerged habitats and species.

VMS – vessel monitoring system

WFD – Water Framework Directive

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 MCZ surrounds Rathlin Island (generally extending landward to the MHW mark, excluding the harbour) with a large extension between the north of the Island and the North Channel. The MCZ encompasses an area of 90.57 km^2 (Figure 1). The MCZ contains the only known location of the Deep-sea bed habitat (>200 metres) in Northern Ireland's inshore waters. In 2008, a highly specialised seabed survey (Joint Irish Bathymetric Survey) began producing information which led to the discovery of Geodiversity features that indicate past change in relative sea level, such as a submerged lagoon on the north east coast of the island and a shallow shelf dropping off sharply to over 200m to the north west of the island (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 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 MCZ boundary.

A small aquaculture venture was granted a licence in 2013 to grow and harvest the seaweed kelp on longlines in a 0.07km^2 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 MCZ encompasses Rathlin Island Special Area of Conservation (SAC) and Rathlin Island Special Protection Area (SPA) and falls within the Antrim Coast and Glens Area of Outstanding Natural Beauty (AONB).

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

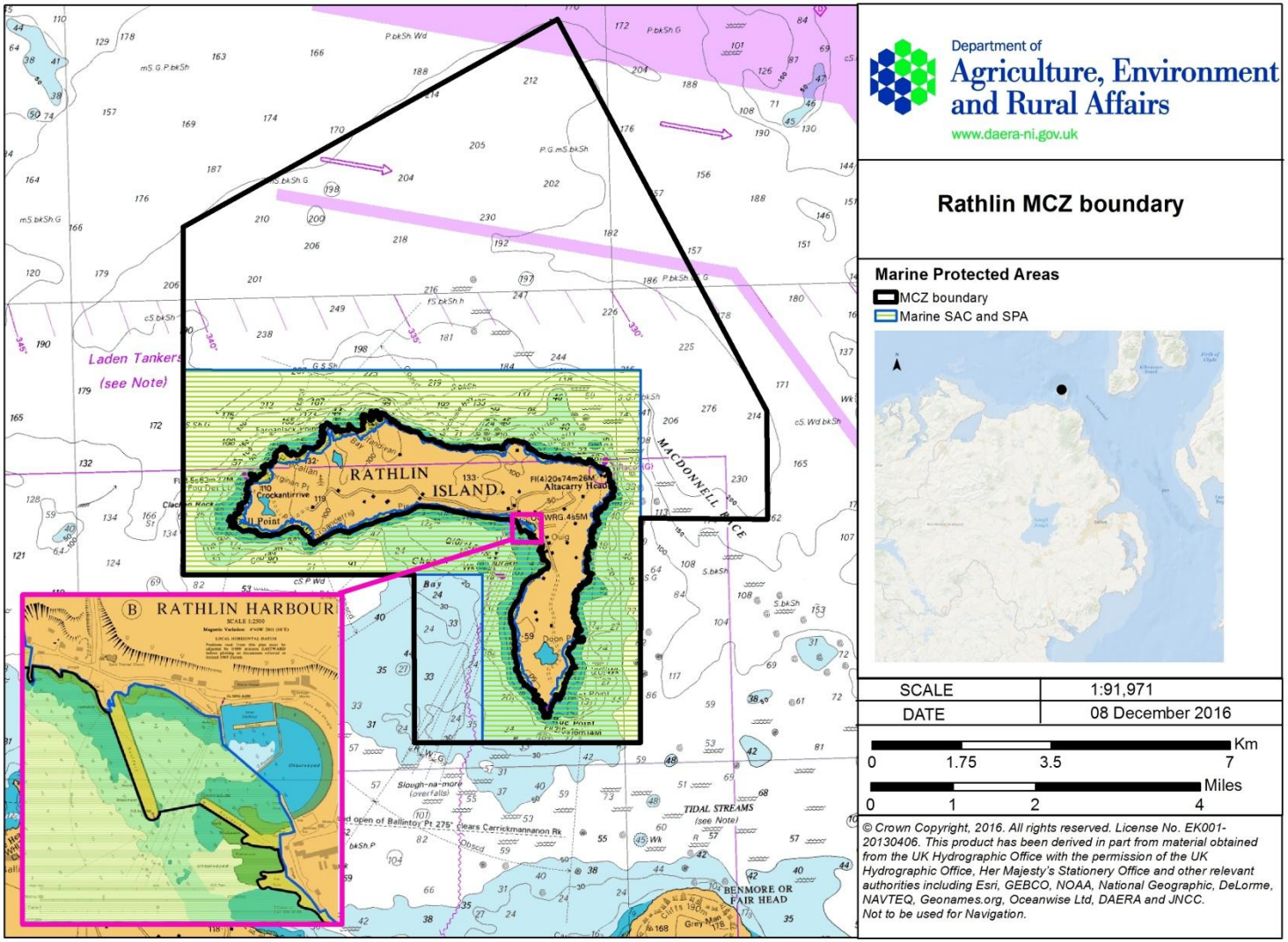

Figure 1 Location of the boundary of Rathlin MCZ

Conservation Objectives, Vulnerability Assessment and MCZ 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

The level of vulnerability is based on a features' sensitivity, and current exposure to pressures associated with human activities. It aids in the development of potential management options.

MCZ Features

Rathlin has been designated as an MCZ for the broadscale habitat **Deep-sea bed**, the bird species **Black guillemot** and **Geological/Geomorphological features indicating past change in relative sea level (such as submerged paleo-lagoon, cliffs, gullies and sea arches)**.

There are also Priority Marine Features (PMFs) present within the MCZ boundary. While the PMFs identified within the MCZ boundary did not meet the criteria for consideration as a feature in their own right, they are afforded a level of protection based on vulnerability and risk assessment. A full list of these features is provided in Annex II.

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 MCZ. 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 or the deep-sea sponge aggregations in Northern Ireland but further survey work in the Deep-sea bed off Rathlin may locate either habitat. 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 MCZ 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 deep mobile sediments, shell debris, coarse sands and cobbles with boulders and many of these areas could be considered as offshore mixed sediments.

As the Deep-sea bed feature in Rathlin MCZ 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). The Church Bay area is used primarily for loafing and display activities, particularly in relation to breeding behaviour. Black guillemots are pursuit divers that typically feed close inshore where the seabed is rocky with dense kelp stands. Butterfish (*Pholis gunnellus*) and blennies, the primary source of food for this species, are typically found in these kelp forests present along this stretch of coastline.

These birds tend to feed close inshore and rarely move far from the breeding area even in winter, although 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 guillemots, 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 under 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. The birds nest in the nearby cliffs and rocky crevices 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 MCZ is currently in unfavourable condition, the Department recommends that the **conservation objective is set to *recover* this feature to favourable condition**.

Geological and 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) indicated the existence of submerged cliffs on the north west corner of Rathlin and a submerged paleo-lagoon off the north east corner of the island. Additionally submerged cliffs, gullies, arches and caves were recorded along the north coast of Rathlin during different dive surveys (NISS 1984-1985, SSNI 2006, 2009 and 2011 and Seasearch 2005, 2012 and 2013). The paleo-lagoon 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 MCZ. 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 Geodiversity features have low sensitivity to anthropogenic pressures.

As the Geodiversity features in Rathlin MCZ 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 3-11 have been produced using the MCZ feature data (points, polygons and polylines) shown in Figures 2 to illustrate the location of various activities in relation to Rathlin MCZ.

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 MCZ boundary and these may be afforded incidental protection. It is recognised that management measures to protect MCZ features could protect historic assets.

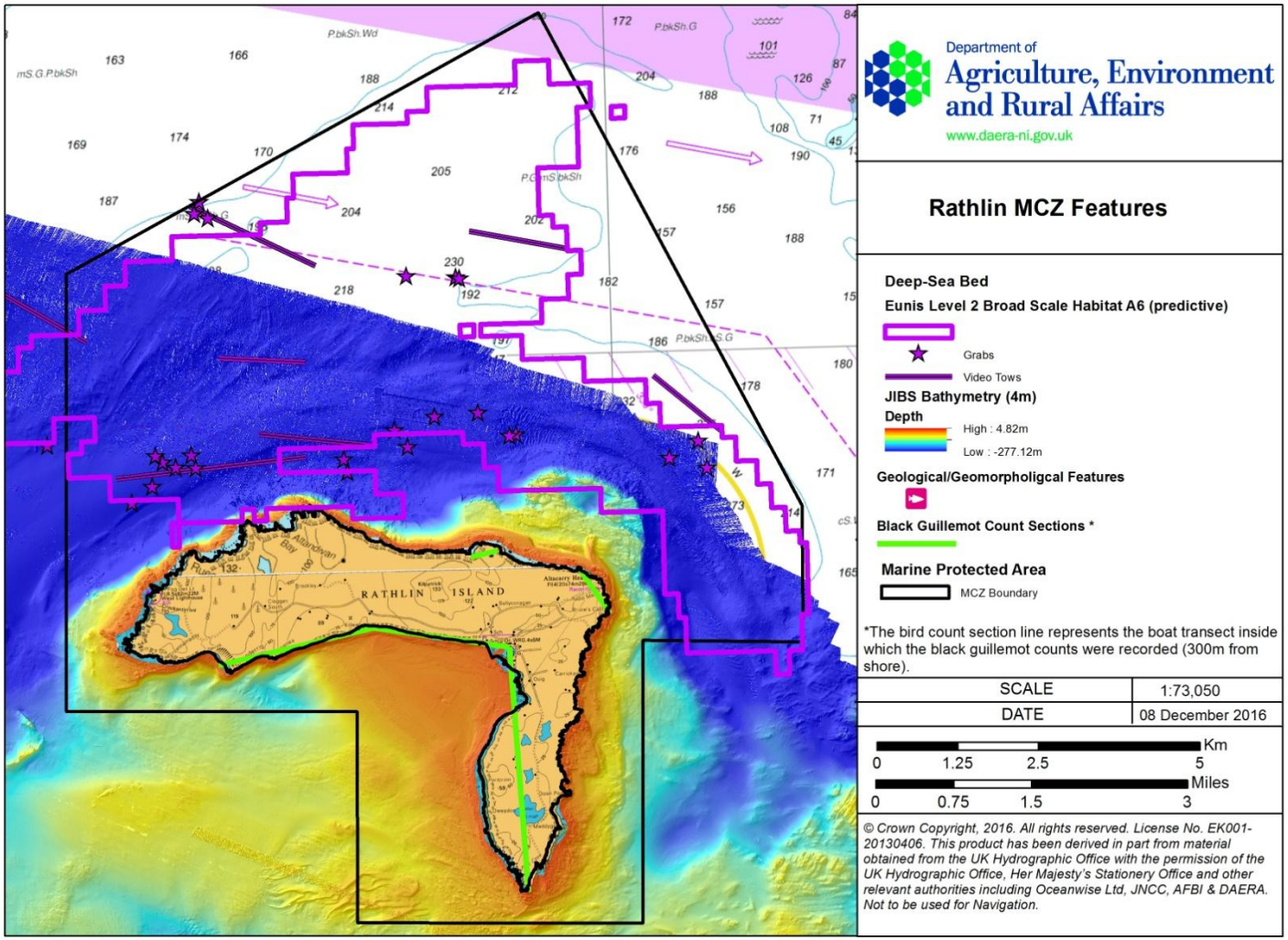

Figure 2 Distribution of the MCZ features in Rathlin

Activities and Potential Management Options in Rathlin MCZ

Table 1 lists the activities that have the potential to affect Rathlin MCZ. 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 designated 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.

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

Type of activity	Activities
Production of living resources	*Aquaculture – macro-algae*
Extraction of living resources	*Fishing – dredging (scallops)* *Fishing – demersal trawling* *Fishing – traps (potting/creeling)*
Energy generation (potential)	*Renewable energy – Tidal Resource Zone* *Marine hydrocarbon extraction – Oil and Gas exploration*
Coastal infrastructure	*Coastal docks, ports & marinas* *Coastal defence & land claim*
Waste management activities	*Sewage disposal (Waste water treatment Works & outfalls)* *Dredge disposal*
Transport	*Shipping – general at sea (Moorings, Anchorage & Vessel movements* *Shipping – port operations within the Harbour Authority limits (mooring, beaching, launching, ferry route, etc.)*
Recreation and leisure	*Recreational activities (SCUBA Diving, Sailing, Windsurfing, Kayaking/canoeing, Bird watching Recreational fishing)*
Marine research	*Scientific and Archaeological activities*
Other man-made structures	*Submarine cable & pipeline operations*

All the activities are assessed against the level of impact or risk of damage to the MCZ features based on the latter's vulnerability to each activity. Only those activities considered capable of affecting the designated 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 full vulnerability and risk of damage assessments are provided in Annex III.

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

Advice on management implications

In order to meet the conservation objectives listed above, all public authorities are required to manage activities within their remit to avoid significant loss, damage or change to the qualifying features of the site. Within Rathlin the features are vulnerable to the following pressures – activities should be managed so that they do not result in:

- Water flow (tidal current) changes (including sediment transport considerations)
- Wave exposure changes
- Synthetic compound contamination
- De-oxygenation
- Nutrient enrichment
- Physical change (to another seabed type)
- Habitat structure changes
- Abrasion/disturbance of the surface of the substratum or seabed
- Changes in suspended solids (water clarity)
- Siltation rate changes (including smothering)
- Underwater noise changes
- Death or injury by collision
- Visual disturbance (behaviour)
- Introduction or spread of non-indigenous species
- Removal of non-target species
- Introduction and/or increase of mammalian predators

Production of living resources: *Aquaculture – macro-algae (kelp longlines)*

There is one licensed site for the growth and harvesting of kelp on longlines within Church Bay (Figure 3). The plot is 0.07km^2 and lies in an area utilised by Black guillemot. There are limited publications on the impacts of seaweed cultivation on seabirds; however, potential impacts on **Black guillemot** include **visual disturbance** (behaviour), **underwater noise changes, introduction or spread of non-indigenous species** and **death or injury by collision**. Other pressures for the MCZ feature associated with macro-algae cultivation are **water flow changes**, **wave exposure changes**, **habitat structure changes** and **changes in suspended solids** (water clarity).

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 moderate with a moderate 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 considered that the risk of not achieving the conservation objectives for the Black guillemot feature is low unless activities associated with seaweed cultivation were to increase in intensity in the future. At present no additional management is required as this activity is licensed.

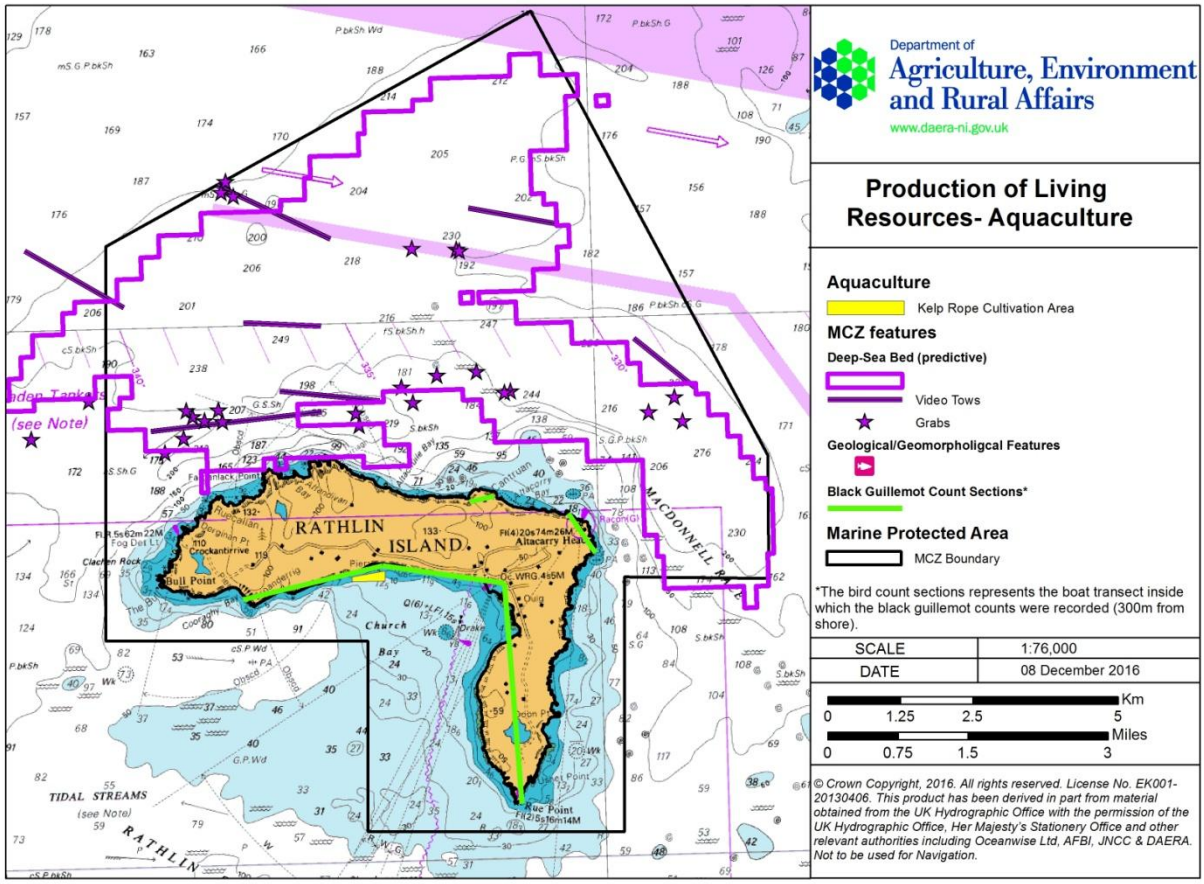

Figure 3 Location of licensed aquaculture sites in relation to Rathlin MCZ

Table 2 Potential Management Options for production of living resources

Potential Management Options	**No additional management is required.**
Proposed way forward	The development of new aquaculture operations will require a licence from the Department. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury of seabirds from collision with vessels particularly during the breeding season (spring). This will also apply to other protected seabirds identified in the citation for Rathlin Island SPA.
Relationship with existing Management Options	The Department is responsible for regulating aquaculture in Northern Ireland.

Extraction of living resources: *Fishing – dredging (scallops), demersal trawling and traps (potting/creeling)*

Figure 4 shows the overlap between commercial fishing using mobile gear (scallop dredging and demersal trawling) and static gear (pots) within the MCZ. A quantitative analysis of data from Vessel Monitoring Systems (VMS) from 2006-2014 shows that average fishing effort within the MCZ is only 1.36% of the total effort within ICES rectangle 39E3. The average fishing effort is 50.85 hours per annum which equates to 0.55hrs/km^2. The Department acknowledges that this is only an indicative value as VMS is limited to vessels larger than 12m. A voluntary ban on the use of mobile gear is in place and has been well respected by local fishermen. The voluntary agreement will be replaced by the Rathlin Island (Prohibition of Fishing Methods) Regulations (NI) 2016 which will come into effect on 1 January 2017. The Department may also introduce further fisheries regulations to provide protection for a small non-disturbance zone at Beirne Head, (Sroanlea) and byelaws for 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 MCZ.

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 MCZ features are located is considered to be relatively low it is important to understand the sensitivity of the MCZ features to this activity in order to meet the conservation objectives.

Black guillemots are moderately vulnerable to the following pressures associated with dredging and trawling: **visual disturbance** (behaviour)**, underwater noise changes, introduction or spread of non-indigenous species, removal of non-target species and collision** with boats while diving or emerging from feeding particularly close to their nesting sites. Black guillemots also have low vulnerability to **synthetic compound contamination**, **physical change** (to another seabed type), **habitat structure changes** and **changes in suspended solids** (water clarity). **It is considered that the risk of not achieving the conservation objectives for Black guillemot is moderate due to the pressures associated with mobile gear. Black guillemot is not considered to be exposed to fishing using pots/creels unless these activities were to increase in intensity in the future.**

The MCZ feature **Deep-sea bed** is not considered to be vulnerable to the level of surface abrasion caused by static 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 moderate vulnerability to **physical change (to another seabed type)**, and a low vulnerability to **de-oxygenation, siltation rate changes** (including smothering), **species removal and overall abrasion** (surface

and subsurface) from fishing using mobile gear (e.g. trawling and dredging). The degree of vulnerability 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 (e.g. mud) but their associated species (e.g. hydroids or sponges) may be more sensitive to the effects of trawling and dredging. **It is considered that the risk of not achieving the conservation objectives for Deep-sea bed is moderate due to the pressures associated with mobile gear.**

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, as detailed above.

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 to avoid causing injury or death to the animal. The Department has been unable to source site-specific data on the presence of skate within the MCZ 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.

It is considered that dredging and demersal trawling should be avoided within the MCZ boundary where they are likely to impact the MCZ features to aid the achievement of the conservation objectives.

There is a low risk of not achieving the conservation objectives for the MCZ features associated with fishing using traps (pots/creels) within the MCZ unless activities were to increase in intensity in the future. At present no additional management is required.

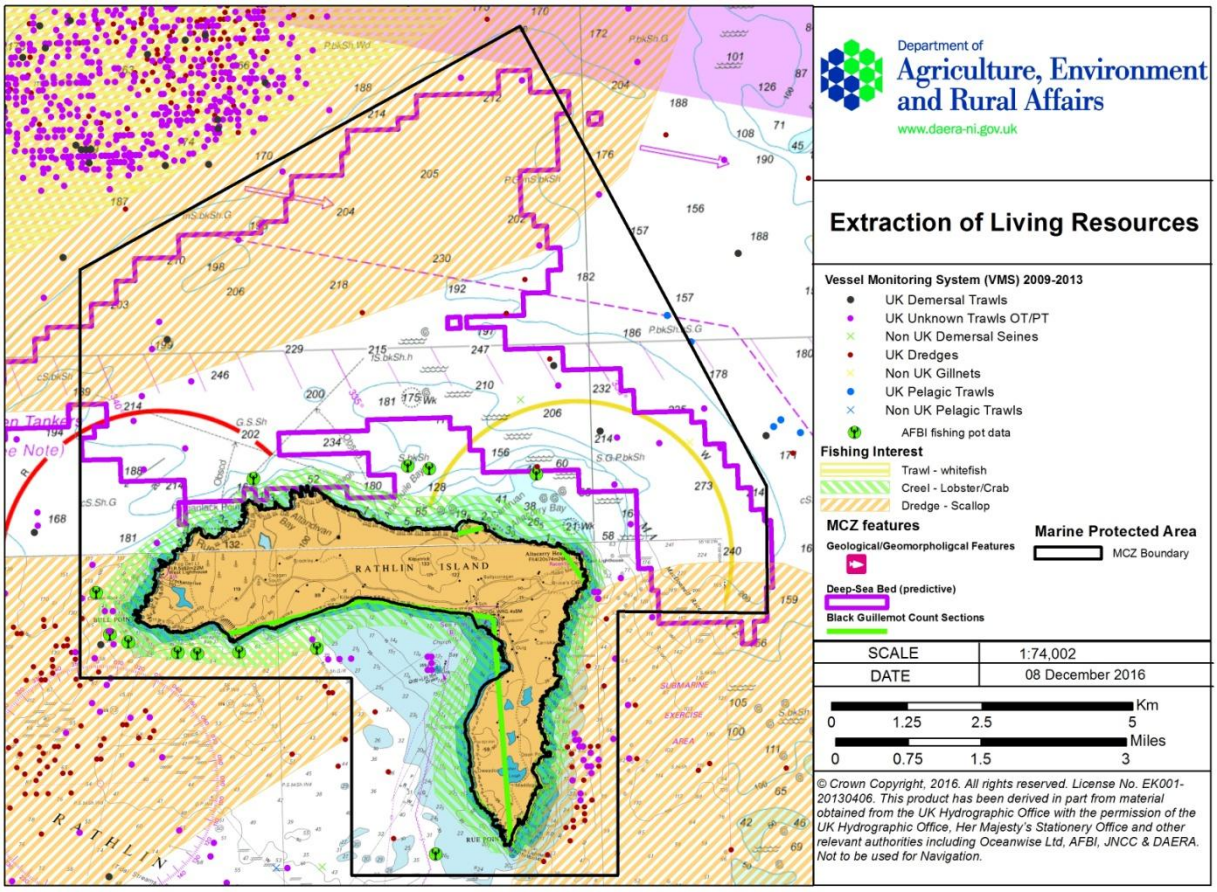

Figure 4 Location of commercial fishing in relation to Rathlin MCZ

Table 3 Potential Management Options for the extraction of living resources

Potential Management Options	**Management measures are recommended to remove or avoid pressures associated with dredging and demersal trawling in areas where they are likely to impact the MCZ features.** **No additional management is required with regards to fishing using traps (pot/creels).**
Proposed way forward	The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury of seabirds from collision with vessels particularly during the breeding season (spring). The Department is responsible, through regulations, for the development of fisheries management measures to protect the MCZ features. The MCZ 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.
Relationship with existing Management Options	A voluntary ban on the use of mobile fishing gear within Rathlin Island SAC is currently in place (recommendation from the Rathlin Island European Marine Site Management Scheme). The Rathlin Island (Prohibition of Fishing Methods) Regulations (NI) 2016 will come into effect on 1 January 2017. The Department will liaise closely with all stakeholders involved in activities which may impact the MCZ features.

Energy generation (potential): *Renewable energy –Tidal resource zone and Marine hydrocarbon extraction – Oil and Gas exploration*

The Strategic Environmental Assessment (SEA) of Offshore Wind and Marine Renewable Energy by the Department of Energy, Trade and Investment (DETI, 2009) assessed the potential for commercial and test/demonstration tidal stream sites in NI waters. This assessment 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 to develop two tidal stream projects which will generate 100MW at Torr Head and Fair Head, respectively. Figure 5 illustrates the overall Tidal Resource Zone and the tidal development sites.

Black guillemots are sensitive* to the following pressures associated with tidal energy production: **synthetic compound contamination**, **visual disturbance** (behaviour),**water flow changes**, **wave exposure**, **changes in suspended solids** (water clarity), **death or injury by collision**, **underwater noise, introduction or spread of non-indigenous species**, **habitat structure changes** and **physical changes to another seabed type**.

Deep-sea bed is sensitive* to the following pressures associated with tidal energy: **physical changes to another seabed type**, **surface abrasion** and **siltation rate changes** (including smothering).

The only Geodiversity feature to show any sensitivity* to energy production was the paleo-lagoon. According to the assessment the paleo-lagoon was at low risk from renewable energy installations.

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 MCZ 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 MCZ will need to be considered if future**

* Currently there are no energy generation licences in Rathlin so the features are not exposed to the pressures normally associated with this activity. As such, vulnerability assessments cannot be carried out. Instead, the sensitivity of the features to pressures is referred to here.

applications are submitted. At present no additional management is required.

The Department for Business, Energy and Industrial Strategy (UK) (BEIS) administers marine environmental regulations associated with oil & gas exploration and production and the decommissioning of marine installations, wells, pipelines and associated infrastructure in the UK marine area (excluding internal waters). The Oil and Gas Authority, a Government company of BEIS, is the UK licensing authority for oil and gas exploration, development and production (excluding internal waters). At present there is no oil or gas exploration licence for the Rathlin Basin (Rathlin MCZ sits within this area). A licence had been granted in 2011 but this has since been relinquished. The Oil and Gas Authority may release this block in a future licensing round. As such, the sensitivities of the MCZ features to pressures associated with this activity are considered below.

Black guillemots have low to moderate sensitivities* to the following pressures associated with marine hydrocarbon extraction: **synthetic compound contamination**, **visual disturbance** (behaviour), **changes in suspended solids** (water clarity), **death or injury by collision**, **underwater noise, introduction or spread of non-indigenous species**, habitat structure changes and **physical changes to another seabed type**.

Deep-sea bed has a low sensitivity* to the following pressures associated with oil/gas extraction: **de-oxygenation**, **physical changes to another seabed type**, **surface abrasion** and **siltation rate changes** (including smothering).

The only Geodiversity feature to show any sensitivity* to energy production was the paleo-lagoon. According to the assessment the paleo- lagoon was at low risk from renewable energy installations.

There are no oil/gas exploration licences in this area at the moment, and the Department would be consulted on any licences within the MCZ so the risk of not meeting the conservation objective is considered low.

The SEA report (DETI, 2009) shows 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 measures taken at the EIA/Projects stage, these impacts could be reduced. **At present, with no exploratory licence in place there is no risk to the achievement of the conservation objectives for the designated features. Therefore, no additional management is required.**

* see previous

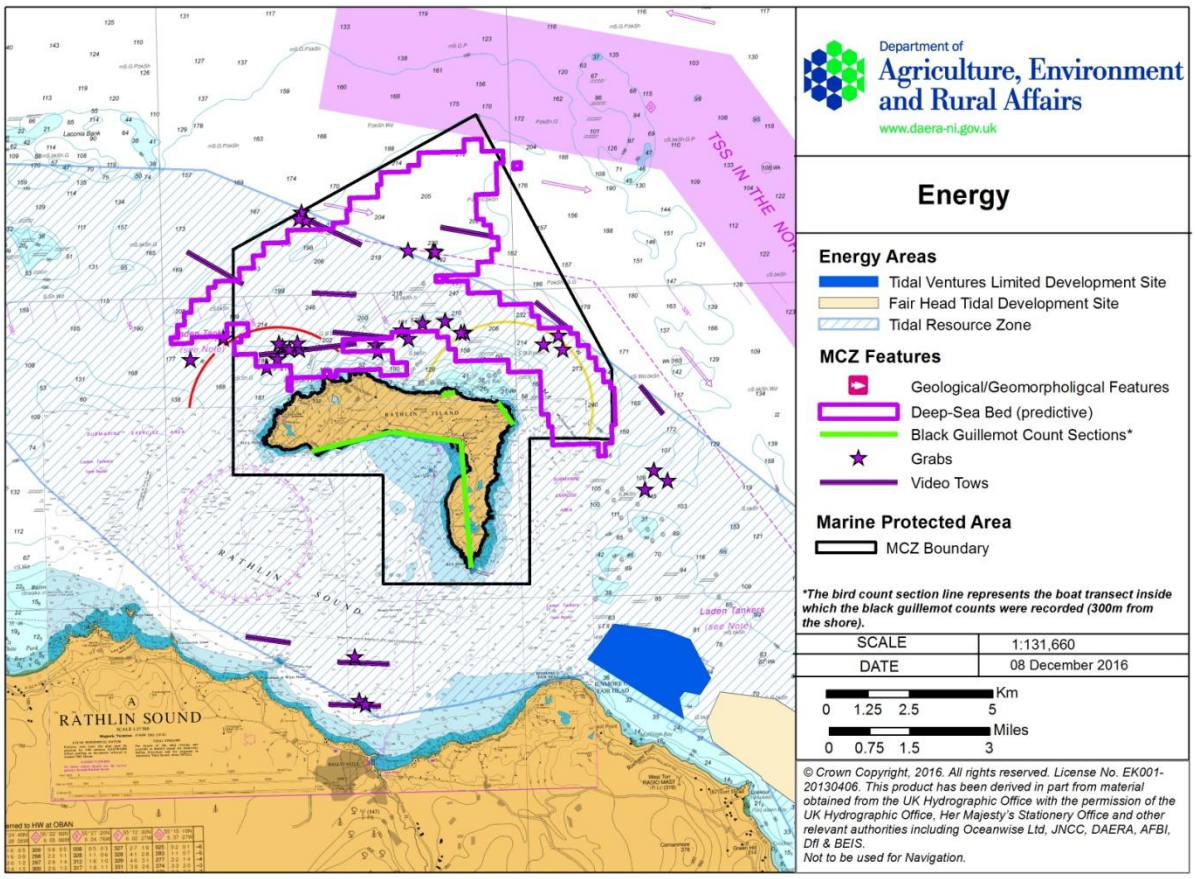

Figure 5 Location of potential energy generation in relation to Rathlin MCZ

Table 4 Potential Management Options for energy production

Potential Management Options	**No additional management is required.**
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 MCZ.

Relationship with existing Management Options	The Department is the marine licensing authority for the NI inshore region.
Tidal resource zone	The Department for the Economy is the consenting authority for the construction and operation of electricity generation installations.
Oil and Gas	The UK's Department for Business, Energy and Industrial Strategy 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 Oil and Gas Authority, a Government Company, is the UK licensing authority for oil and gas exploration, development and production (excluding internal waters). The Crown Estate has an interest as the seabed and subsurface owner and leasing authority.

Coastal infrastructure: *Coastal docks, ports & marinas and coastal defence & land claim*

While there is no real industrial activity around Rathlin Island, there is a busy marina in Church Bay (Figure 6). Rathlin Island also has a busy ferry harbour which is due to be extended to accommodate a larger ferry.

Construction or maintenance activities, within the marina, 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: **visual disturbance** (behaviour), **death/injury from collision** with vessels, **physical change** (to another seabed type), **habitat structure changes**, **nutrient enrichment**, **synthetic compound contamination**, **changes in suspended solids (water clarity)**, **water flow** (tidal current) **changes, wave exposure changes**, **underwater noise changes** and **introduction or spread of non-indigenous species**.

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.

It is considered that the risk of not achieving the conservation objectives for the Black guillemot feature is low unless activities associated with coastal infrastructure were to increase in intensity in the future. At present no additional management is required.

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

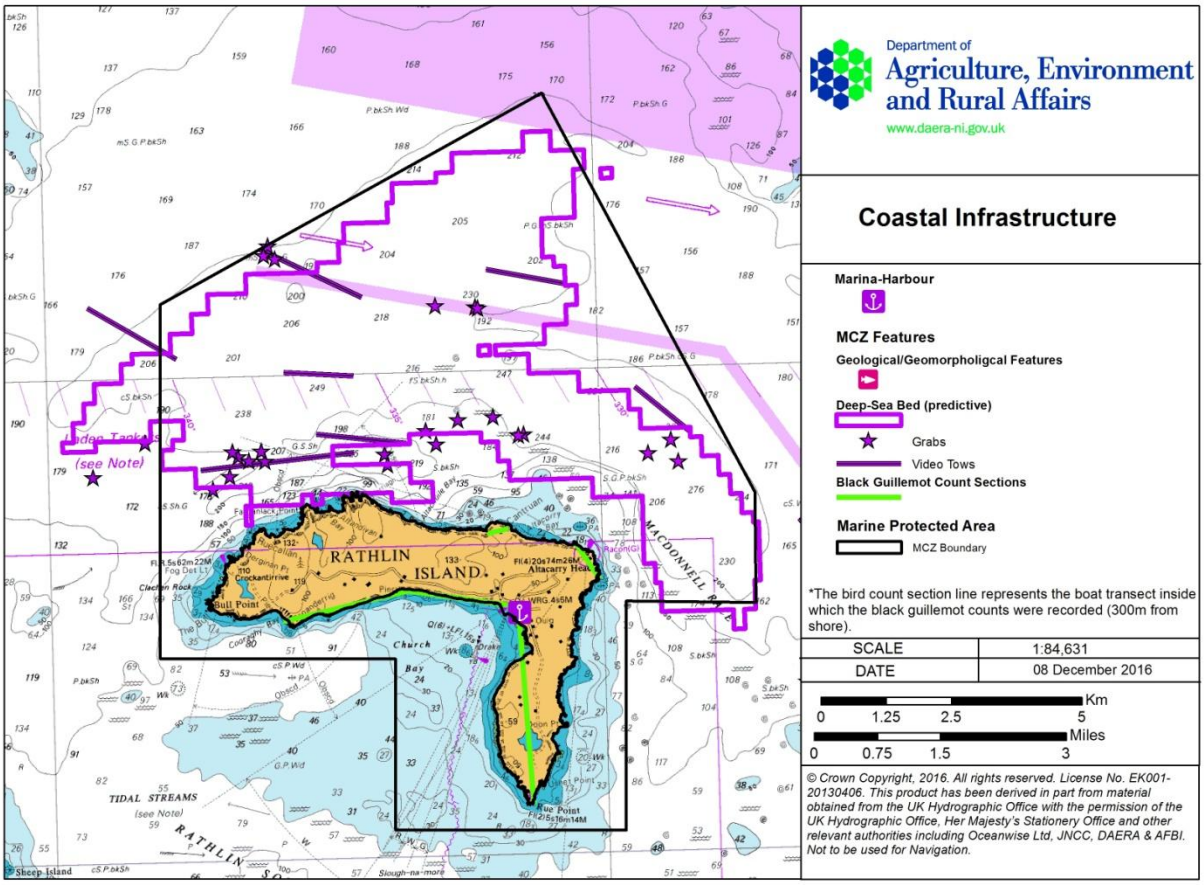

Figure 6 Location of coastal infrastructure in relation to Rathlin MCZ

Table 5 Potential Management Options for coastal infrastructure

Potential Management Options	**No additional management is required.**
Proposed way forward	The Department will continue discussions with those involved with Infrastructure activities and operations within the MCZ to help understand more about the interactions with the MCZ features. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury of seabirds from collision with vessels particularly during the breeding season.

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. Such works may also be subject to the marine licence and planning process.

Waste management: *Sewage disposal and 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 MCZ 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 sensitive to pressures associated with sewage 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 sewage disposal can include **synthetic compound contamination, changes in suspended solids** (water clarity)**, underwater noise changes, death/injury from collision, visual disturbance** (behaviour), **introduction or spread of non-indigenous species** and **nutrient enrichment**, which could cause plankton blooms leading to decreased visibility for foraging birds, or increased growth of filamentous algae. Vulnerability is assessed as low.

Although the dredge disposal site lies outside the MCZ, pressures associated with dredging activities in Rathlin harbour may adversely affect Black guillemot. The species has a low vulnerability to **visual disturbance** (behaviour), **death /injury from collision** with vessels and **synthetic compound contamination, nutrient enrichment, habitat structure changes, changes in suspended solids** (water clarity)**, underwater noise changes, introduction or spread of non-indigenous species** and **removal of non-target species**.

It is considered that the risk of not achieving the conservation objectives for the designated features is low unless the location or intensity of the discharge or dredge disposal activity was to change in the future. At present no additional management is required.

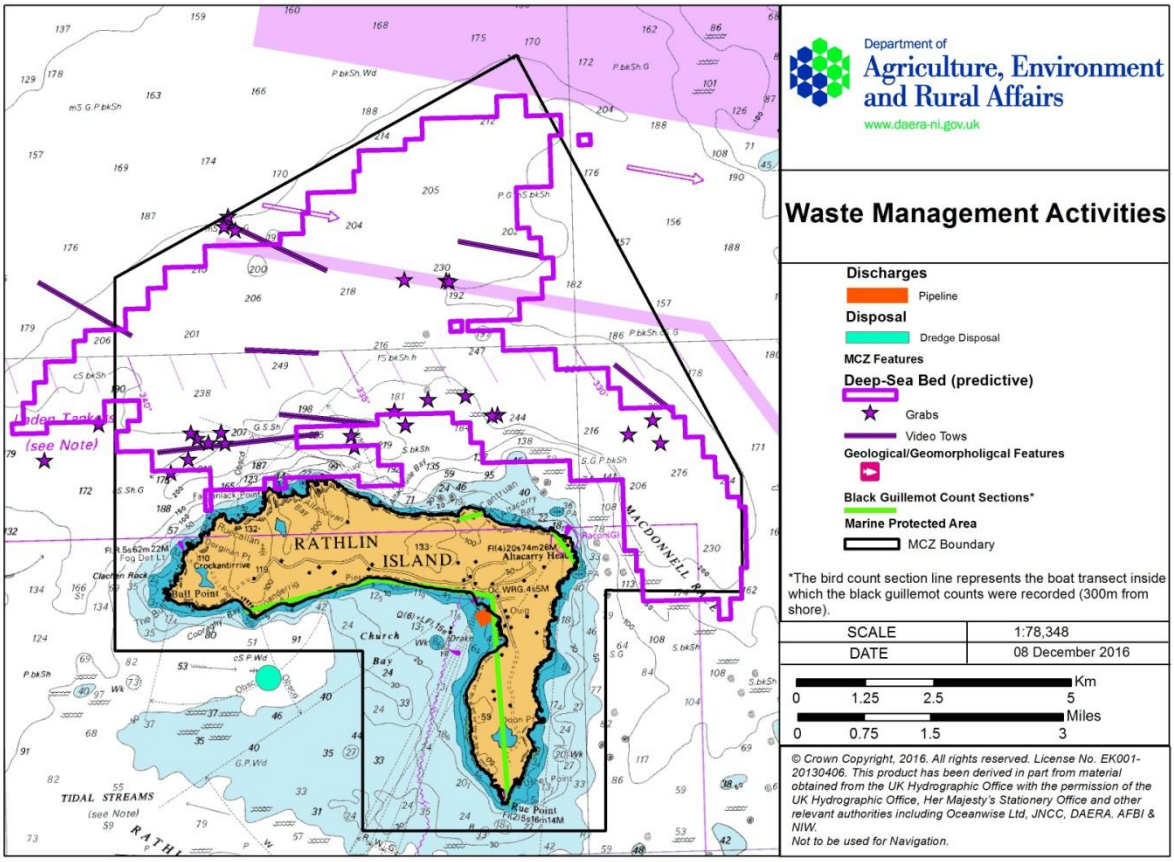

Figure 7 Location of waste management activities (disposal and dredge disposal site) in relation to Rathlin MCZ

Table 6 Potential Management Options for waste management

Potential Management Options	**No additional management is required.**
Proposed way forward	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 MCZ. New applications for sewage or dredge disposal will be subject to the marine licensing and Water Order discharge consent processes which will take the MCZ features into consideration.

Relationship with existing Management Options	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), Water (Northern Ireland) Order 1999. The Department is responsible for licensing dredging and disposal activities in the Northern Ireland inshore region. 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.

Transport: Shipping – *general at sea (moorings, anchorage & vessel movements) and Shipping – port operations within the Harbour Authority limits (mooring, beaching, launching, ferry route etc.)*

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, travelling through an area where Black guillemots forage. There is also a shallow (approximately 1.2m at low water) anchorage area just inside the breakwater wall. **Black guillemots** are at moderate risk of not achieving the conservation objectives by **synthetic compound contamination, changes in suspended solids** (water clarity)**, underwater noise changes, introduction or spread of non-indigenous species, wave exposure changes, visual disturbance** (behaviour) or **death/injury from collision** with shipping. Boats should also avoid anchoring adjacent to Black guillemot nesting sites. 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 through the North Channel. The Marine Maritime Organisation (MMO) carried out a study examining shipping transit data around the UK (MMO, 2014); Figure 8 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 has low vulnerability to **overall abrasion** (surface and subsurface) associated with shipping (from anchoring or mooring) and **siltation rate changes** (including smothering). The risk of not achieving conservation objectives is low 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.

Management measures are recommended to remove or avoid pressures associated with shipping – general at sea where they are likely to impact Black guillemot.

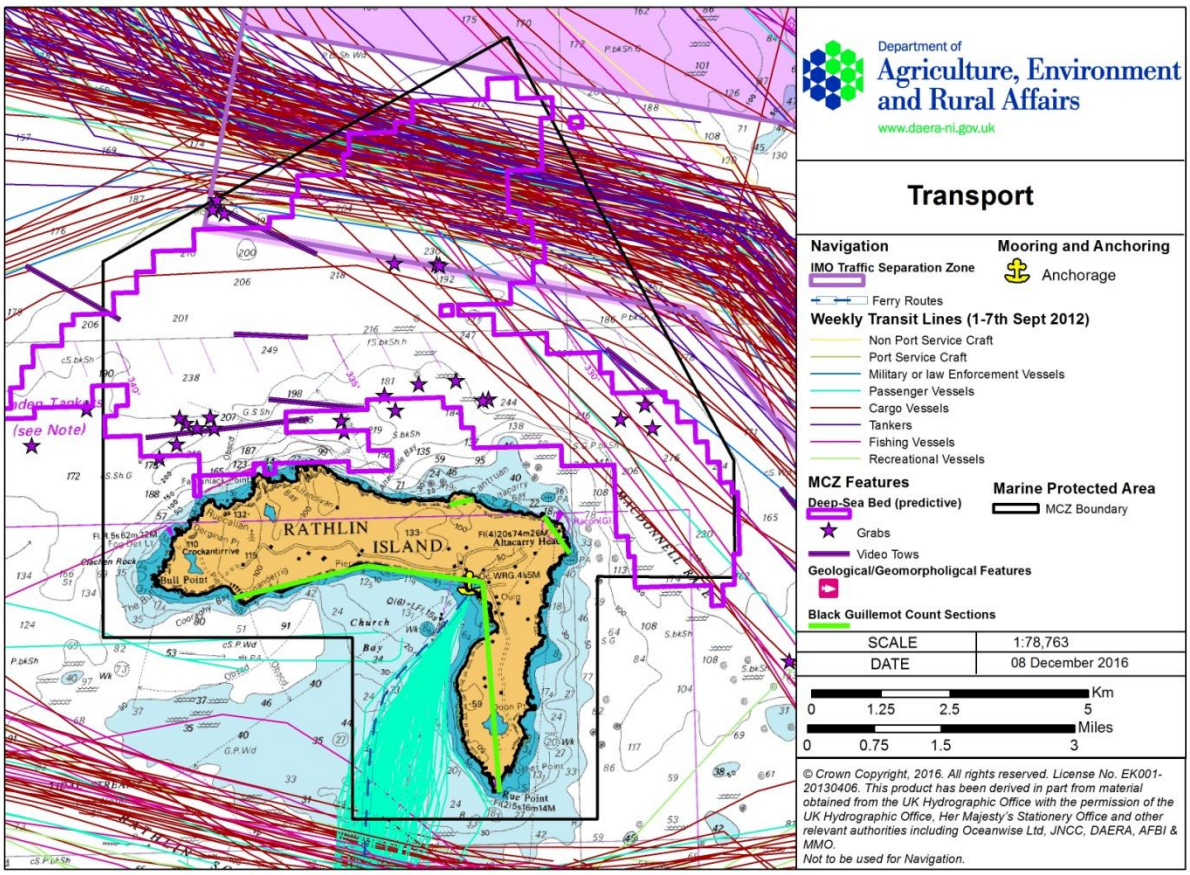

Figure 8 Location of transport in relation to Rathlin MCZ

Table 7 Potential Management Options for transport

Potential Management Options	**Management measures are recommended to remove or avoid pressures associated with shipping – general at sea where they are likely to impact Black guillemot.** **Anchoring in emergency situations will not be restricted.** **No additional management is required for shipping – port operations within the Harbour Authority limits**.
Proposed way forward	The Department will continue to engage with those stakeholders involved in marine traffic within the MCZ to develop appropriate management measures. The Department may propose a speed limit zone within the area to minimise the likelihood of disturbance and death/injury of seabirds from collision with vessels particularly during the breeding season (spring).
Relationship with existing Management Options	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. The Department will continue to work with the Department for Infrastructure (DfI), who is planning to replace the current vehicle ferry, to ensure that the proposed new ferry does not impact on the MCZ or SAC/SPA features. Permanent moorings are licensed by the Crown Estate, as owners of the seabed. Any new moorings will require a marine licence from the Department.

Recreation and leisure: ***Recreational activities – SCUBA diving, sailing, windsurfing, kayaking/canoeing, bird watching, recreational sea angling, recreational fishing***

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, cetacean (whales and dolphins) and seal watching, and for diving excursions in the seas around Rathlin.

Black guillemots are highly vulnerable to **underwater noise changes**, **death or injury by collision** with marine vessels, **visual disturbance** (behaviour) (when foraging) and **removal of non-target species** and **moderately vulnerable to changes in suspended solids** (water clarity). 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 to high without management in place to reduce adverse effects from recreation and leisure boating activities.**

Deep-sea bed habitat has low vulnerability to pressures such as **overall abrasion** (surface and subsurface) and **removal of non-target species** which can be associated with tourism and recreation (from anchoring and mooring). Exposure to these pressures is likely to be negligible due to the depth of water. **The risk of not achieving the conservation objectives for the Deep-sea bed feature is low.**

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 MCZ 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 Rathlin Island European Marine Site 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.

Management measures are recommended to remove or avoid pressures associated with recreation and leisure activities where they are likely to impact Black guillemot. Anchoring in emergency situations will not be restricted.

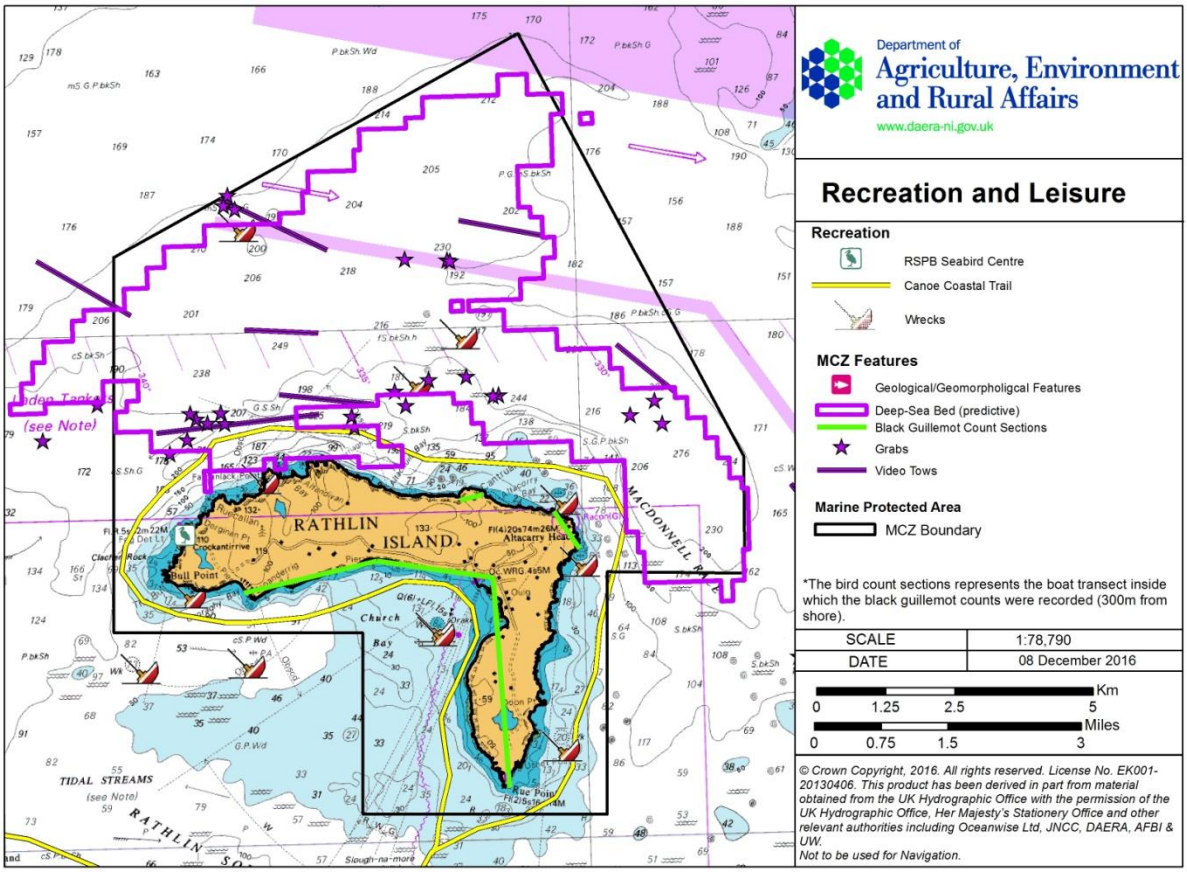

Figure 9 Location of recreation and leisure in relation to Rathlin MCZ

Table 8 Potential Management Options for recreation and leisure

Potential Management Options	**Management measures are recommended to remove or avoid pressures associated with recreation and leisure activities (anchoring and mooring) where they are likely to impact Black guillemot.** **Anchoring in emergency situations will not be restricted.**

Proposed way forward	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). The Department will continue to engage with those stakeholders involved in recreation and leisure within the MCZ to develop appropriate management measures.
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 Department for the Economy (DfE) is responsible for tourism policy while the District Councils have a role in promoting local tourism and recreation. The Department for Communities (DfC) is responsible for arts and culture, sport. The Department for Infrastructure (DfI) is responsible for inland waterways.

Marine research: *Scientific and Archaeological*

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)

AFBI was commissioned by the Department to carry out seabed surveys within Rathlin MCZ; the most recent survey work in the north of the MCZ describes the subtidal benthic communities and physical environment of the seabed for the MCZ designation programme. AFBI, on behalf of DARD (prior to the formation of DAERA), 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 MCZ 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 MCZ 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 designated features appear unlikely to impact upon legitimate archaeological activities in the MCZ.

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).

Marine research activities may have the potential to cause the deterioration of **Deep-sea bed** feature through **overall abrasion** (surface and subsurface) and **siltation rate changes** (including smothering). **Black guillemots** have low vulnerability to pressures such as **habitat structure changes**, changes in suspended solids (water clarity), **underwater noise changes**, **visual disturbance** (behaviour) when foraging, **death /injury from collision** with marine vessels and **introduction or spread of non-native species**. **Geodiversity** features are not considered vulnerable to pressures associated with marine research 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 marine research activities under the above mentioned surveys are performed by trained, qualified staff using non-invasive techniques (where possible) such as acoustic and video methodologies. In addition, the Department must be notified before any activities within the MCZ take place and will require the provision of detailed methodologies for all Marine research to assess if any impacts to the MCZ features are likely to occur.

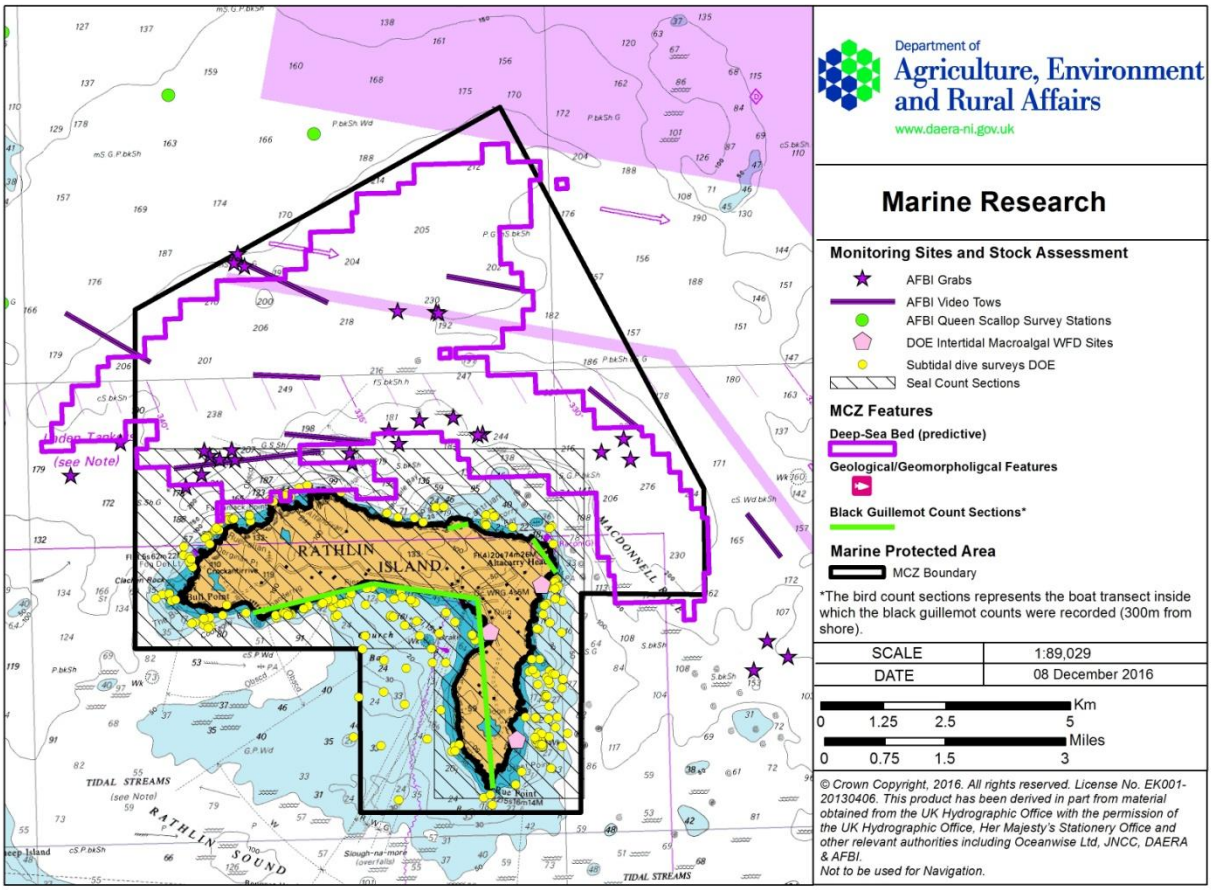

Figure 10 Location of marine research activities in relation to Rathlin MCZ

Table 9 Potential Management Options for marine research

Potential Management Options	**No additional management is required.**
Proposed way forward	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. Black guillemot will be surveyed following the Seabird Monitoring Programme methodology using five-year running means. The Department will require the provision of detailed methodologies for all marine research activities prior to these being carried out to assess if any impacts to the features are likely to occur.

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).

Other man-made structures: Submarine cable & pipeline operations

A 10.4km subsea electricity cable extends from Ballycastle to Rathlin Island which is owned and managed by Power NI. This cable lies within the MCZ but there is no spatial conflict between this and the Deep-sea bed or Geodiversity features. It lies within the breeding and foraging areas for Black guillemot (Figure 11).

There is one outfall pipe in the Church Bay area; this is a discharge pipe for the sewage treatment works. The pressures associated with waste disposal have already been covered in the Waste management section.

Construction or maintenance activities of the submarine cable have the potential to cause disturbance to breeding and foraging behaviours of **Black guillemot**. The main pressures linked to submarine cable and pipeline operations in the area are **physical change** (to another seabed type), **habitat structure changes**, **changes in suspended solids** (water clarity), **underwater noise changes**, **death or injury by collision** with marine vessels, **visual disturbance** (behaviour) and **introduction or spread of non-indigenous species**.

Disturbance and **death/injury from collision** with vessels (during the construction or maintenance phase) 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 activities associated with the submarine power cable due to their location; therefore there is no risk to the achievement of the conservation objectives.

It is considered that the risk of not achieving the conservation objectives of the designated features is low since all current activities have been licensed. Any future construction or maintenance activities associated with the submarine cable or pipeline may require a marine licence. At present no additional management is required. Emergency operations will not be restricted.

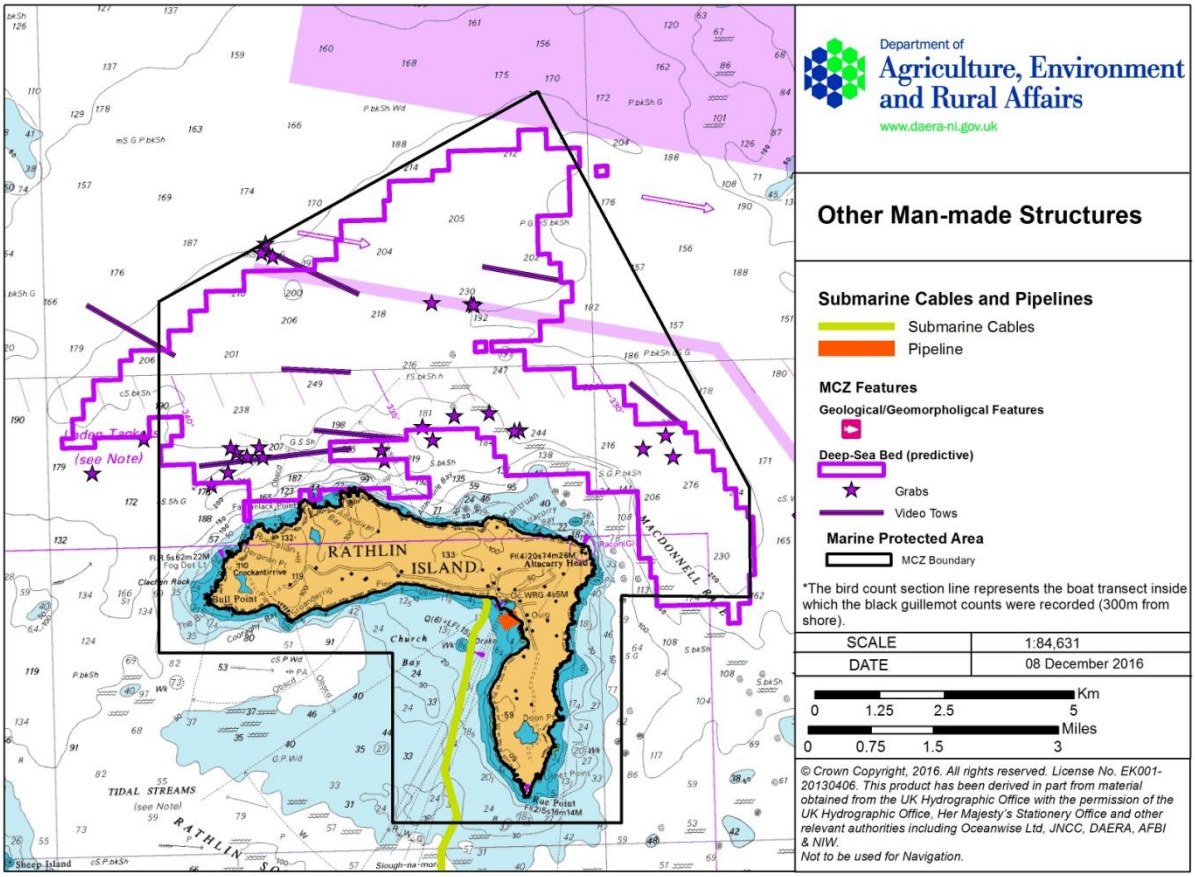

Figure 11 Location of other man-made structures in relation to Rathlin MCZ

Table 10 Potential Management Options for other man-made structures

Potential Management Options	**No additional management is required.** **Emergency operations will not be restricted.**
Proposed way forward	Any proposed maintenance works (including construction) to the submarine cable or pipeline may require a marine licence from the Department. The potential impact to the MCZ features will be considered during the assessment process. The Department may propose a speed restriction zone within the area to minimise the likelihood of disturbance and death/injury of seabirds from collision with vessels servicing the cable/pipeline particularly during the breeding season.

Relationship with existing Management Options	NIW is responsible for waste water treatment and the construction, operation and maintenance of sewage outfalls. 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 Water (Northern Ireland) Order 1999. 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.

Summary of Potential Management Options

Table 11 Potential Management Options for Rathlin MCZ

Production of living resources: *Aquaculture – macro-algae*	**No additional management is required.**
Extraction of living resources: *Fishing – dredging and demersal trawling* *Fishing – traps (creeling/potting)*	**Management measures are recommended to remove or avoid pressures associated with dredging and demersal trawling in areas where they are likely to impact the MCZ features.** **No additional management is required.**
Energy generation: *Renewable energy and Marine hydrocarbon extraction*	**No additional management is required.**
Coastal infrastructure: *Coastal docks, ports & marinas and Coastal defence & land claim*	**No additional management is required.**
Waste management: *Sewage disposal and Dredge disposal*	**No additional management is required.**
Transport: *Shipping – general at sea (mooring, anchorage & vessel movements* *Shipping – port operations within the Harbour Authority limits (mooring, beaching, launching, ferry route etc.)*	**Management measures are recommended to remove or avoid pressures associated with shipping – general at sea where they are likely to impact Black guillemot.** **Anchoring in emergency situations will not be restricted.** **No additional management is required**.

Recreation and leisure: *Recreational activities – SCUBA Diving, sailing, windsurfing, kayaking/canoeing, bird watching, recreational fishing*	**Management measures are recommended to remove or avoid pressures associated with recreation and leisure activities (anchoring and mooring) where they are likely to impact Black guillemot.** **Anchoring in emergency situations will not be restricted.**
Marine research: *Scientific and Archaeological Activities*	**No additional management is required.**
Other man-made structures: *Submarine cable & pipeline operations*	**No additional management is required.** **Emergency operations will not be restricted.**
Predation from mammalian predators[2]	**Management measures are recommended to remove or avoid predators** where they are likely to impact breeding Black guillemots. This is being taken forward as part of the Rathlin Island European Marine Site Management Scheme.

[2] Predation and the Rathlin Island European Marine Site Management Scheme has been discussed on page 11

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Annex I

Conservation Objectives for Rathlin MCZ

In general the conservation objectives for Rathlin MCZ 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 the habitat's extent is stable or increasing and its structures, functions, quality and the composition of its characteristic biological communities (including diversity and abundance) are such that it remains in a healthy condition, which is not deteriorating. 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.

'Favourable condition' in relation to marine species, means that the quality and quantity of the species habitat and the composition of its population in terms of number, age and sex ratio ensures that the population is maintained in numbers that enable it to thrive.

The conservation objectives have been drafted for the MCZ features of Deep-sea bed and Black guillemot but reference is also 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 *maintain*[1] the Deep-sea bed 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.

Reference is also given to:

- Deep-sea gravel and sand communities

Conservation Objective 2

To *recover*[1] 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 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 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 MCZ

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 Mixed sediment communities Mud 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.

Black guillemot		Population	Bird numbers – survey as per Seabird 2000 methodology (see Gilbert et al., 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 the MCZ

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 mobility species	
Common Name	**Latin name**
Tassel weed	*Carpomitra costata*
Brown seaweed	*Desmarestia dresnayi*
Spindle weed	*Atractophora hypenoides*
Red seaweed	*Cruoria cruoriiformis*
Red seaweed	*Schmitzia hiscockiana*
Red seaweed	*Stenogramme interrupta*
An erect bryozoan	*Bugula turbinata*
Potato crisp bryozoan	*Pentapora foliacea*
Soft coral	*Alcyonium hibernicum*
Burrowing anemone	*Arachnanthus sarsi*
Cup coral	*Caryophyllia inornata*
Cup coral	*Caryophyllia smithii*
Hydroid	*Diphasia alata*
Hydroid	*Diphasia nigra*

Burrowing anemone	*Edwardsia timida*
Hydroid	*Halecium plumosum*
Stalked jellyfish	*Haliclystus auricular*
Hydroid	*Lytocarpia myriophyllum*
Anemone	*Parazoanthus anguicomus*
Yellow trumpet anemone	*Parazoanthus axinellae*
Hydroid	*Polyplumaria flabellata*
Anemone	*Stomphia coccinea*
Hydroid	*Tamarisca tamarisca*
Circular crab	*Atelecyclus rotundatus*
Hermit crab	*Cestopagurus timidus*
Masked crab	*Corystes cassivelaunus*
European lobster	*Homarus gammarus*
Spider crab	*Inachus leptochirus*
Squat lobster	*Munida rugosa*
Spiny lobster/Crawfish	*Palinurus elephas*
Goosefoot starfish	*Anseropoda placenta*
Feather star	*Antedon petasus*
Starfish	*Astropecten irregularis*
Starfish	*Leptasterias (Leptasterias) muelleri*
Cushion Star	*Porania pulvillus*
Sunstar	*Solaster endeca*
Queen Scallop	*Aequipecten opercularis*
Nudibranch	*Cumanotus beaumonti*
Nudibranch	*Cuthona concinna*
Egg cowrie	*Erato volute*

King scallop	*Pecten maximus*
Sponge	*Antho (Acarnia) brattegardi*
Sponge	*Axinella damicornis*
Sponge	*Axinella dissimilis*
Sponge	*Clathria (Clathria) barleei*
Sponge	*Hymedesmia (Hymedesmia) cohesibacilla*
Sponge	*Hymedesmia (Hymedesmia) rathlinia*
Sponge	*Hymerhabdia typica*
Sponge	*Iophon hyndmani*
Sponge	*Lissodendoryx (Ectyodoryx) jenjonesae*
Sponge	*Myxilla (Myxilla) rosacea*
Sponge	*Plocamiancora arndti*
Sponge	*Pyura microcosmus*
Sponge	*Spanioplon armaturum*
Sponge	*Spongionella pulchella*
Sponge	*Stelletta grubii*
Sponge	*Stryphnus ponderosus*
Sponge	*Tethya hibernica*
Sea squirt	*Archidistoma aggregatum*
Sea squirt	*Boltenia echinata*
Football sea squirt	*Diazona violacea*
Pinhead sea squirt	*Pycnoclavella stolonialis*
Sea squirt	*Synoicum incrustatum*
Highly mobile species	
Common Name	**Latin name**
Harbour Porpoise	*Phocoena phocoena*

Bottle-nosed dolphin	*Tursiops truncatus*
Basking Shark	*Cetorhinus maximus*
Lesser spotted dogfish	*Scyliorhinus canicula*
Nursehound	*Scyliorhinus stellaris*
Spurdog	*Squalus acanthias*
Cod	*Gadus morhua*
Angler fish	*Lophius piscatorius*
Ling	*Molva molva*
Plaice	*Pleuronectes platessa*
Sole	*Solea solea*
Grey seal	*Halichoerus grypus*
Common seal	*Phoca vitulina*
European Shag	*Phalacrocorax aristotelis*

Annex III

Sensitivity, exposure and vulnerability Matrix for Rathlin MCZ

Sensitivity and Exposure Key: ●●● High ●● Moderate ● Low ○ Not Sensitive ? No information

Vulnerability Key: High vulnerability Moderate vulnerability Low vulnerability No vulnerability Unknown

Table 1 Deep-sea bed (DSB) Vulnerability Assessment

The vulnerability to each pressure is derived from the sensitivity of the feature to the activity combined with its current exposure to that activity (i.e. to what degree the activity is occurring). The vulnerability rating/score provides a 'snapshot' of what is occurring at the time of the assessment – when considering new activities the exposure will be reassessed to give a new vulnerability rating.

Pressure category	Pressures	Activities associated in the area	DSB		
			Sensitivity	Exposure	Vulnerability
Hydrological pressures	**Temperature changes - local**		●	○	**No**
	Salinity changes - local		●●	○	**No**
	Water flow (tidal current) changes (including sediment transport considerations)		○		**No**
	Emergence regime changes (includes tidal level change considerations)		○		**No**
	Wave exposure changes		○		**No**

Pollution and other Chemical pressures	**Non-synthetic compound contamination - Transition elements & organo-metals**		○		**No**
	Non-synthetic compound contamination - Hydrocarbon & PAH Contamination		○		**No**
	Synthetic compound contamination		?		**No**
	Radionuclide contamination		○		**No**
	Introduction of other substances (solid, liquid or gas)		?		**Unknown**
	De-oxygenation	Extraction of living resources: *Fishing – dredging*	●	●	**Low**
	Nutrient enrichment		○		**No**
	Organic enrichment		○		**No**
Physical loss	**Physical loss (to land or freshwater habitat)**		●●●	○	**No**
	Physical change (to another seabed type)	Extraction of living resources: *Fishing – dredging*	●●●	●	**Moderate**
		Extraction of living resources: *Fishing – demersal trawling*		●	**Moderate**
Physical damage	**Habitat structure changes**		○		**No**

	Penetration and/or disturbance of the substrate below the surface of the seabed - (Overall abrasion)		○		**No**
	Abrasion/disturbance of the surface of the substratum or seabed	Extraction of living resources: *Fishing – dredging*	●	●	**Low**
		Extraction of living resources: *Fishing – demersal trawling*		●	**Low**
		Marine research: *Scientific and Archaeological*		●	**Low**
	Changes in suspended solids (water clarity)		○		**No**
	Siltation rate changes, including smothering (light)		○		**No**
	Siltation rate changes, including smothering (heavy)	Extraction of living resources: *Fishing – dredging*	●	●	**Low**
		Extraction of living resources: *Fishing – demersal trawling*		●	**Low**
		Marine research: *Scientific and Archaeological*		●●	**Low**
Other physical pressures	**Litter**		?		**Unknown**
	Electromagnetic changes		?		**Unknown**
	Underwater noise changes		○		**No**
	Introduction of light		○		**No**

	Barrier to species movement		○		**No**
	Death or injury by collision		○		**No**
	Visual disturbance (behaviour)		○		**No**
Biological pressures	**Genetic modification & translocation of indigenous species**		?		**Unknown**
	Introduction or spread of non- indigenous species		?		**Unknown**
	Introduction of microbial pathogens		?		**Unknown**
	Removal of target species		○		**No**
	Removal of non- target species	Extraction of living resources: *Fishing – dredging*	●●	●	**Low**
		Extraction of living resources: *Fishing – demersal trawling*		●	**Low**

Table 2 Black guillemot (*Cepphus grylle*) (BG) Vulnerability Assessment

The vulnerability to each pressure is derived from the sensitivity of the feature to the activity combined with its current exposure to that activity (i.e. to what degree the activity is occurring). The vulnerability rating/score provides a 'snapshot' of what is occurring at the time of the assessment – when considering new activities the exposure will be reassessed to give a new vulnerability rating.

Pressure category	Pressures	Activities associated in the area	BG		
			Sensitivity	Exposure	Vulnerability
Hydrological pressures	**Temperature changes - local**		?		**Unknown**
	Salinity changes - local		○		**No**
	Water flow (tidal current) changes (including sediment transport considerations)	Production of living resources: *Aquaculture – macro-algae*	●	●●	**Low**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		●	**Low**
	Emergence regime changes (includes tidal level change considerations)		○		**No**
	Wave exposure changes	Production of living resources: *Aquaculture – macro-algae*	●	●●	**Low**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		●	**Low**

		Transport: *Shipping – port operations (mooring, beaching, launching, ferry route etc.)*		●●●	**Moderate**
Pollution and other Chemical pressures	**Non-synthetic compound contamination - Transition elements &**		○		**No**
	Non-synthetic compound contamination - Hydrocarbon & PAH Contamination		○		**No**
	Synthetic compound contamination	Extraction of living resources: *Fishing – dredging*	●	●●	**Low**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		●	**Low**
		Waste management: *Sewage disposal*		●	**Low**
		Waste management: *Dredge disposal*		●	**Low**
		Transport: *Shipping – general at sea (moorings, anchorage & vessel movements)*		●●	**Low**
		Transport: *Shipping – port operations (mooring, beaching, launching, ferry route etc.)*		●●●	**Moderate**
	Radionuclide contamination		○		**No**

	Introduction of other substances (solid, liquid or gas)		?		**Unknown**
	De-oxygenation		○		**No**
	Nutrient enrichment	Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*	●	●	**Low**
		Waste management: *Sewage disposal*		●	**Low**
		Waste management: *Dredge disposal*		●	**Low**
	Organic enrichment		○		**No**
Physical loss	**Physical loss (to land or freshwater habitat)**		?		**Unknown**
	Physical change (to another seabed type)	Extraction of living resources: *Fishing – dredging*	●	●●	**Low**
		Extraction of living resources: *Fishing – demersal trawling*		●●	**Low**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		●	**Low**
		Other man-made structures: *Submarine cable & pipeline operations*		●●	**Low**
Physical damage	**Habitat structure changes**	Production of living resources: *Aquaculture – macro-algae*	●	●●	**Low**

		Extraction of living resources: *Fishing – dredging*		●●	**Low**
		Extraction of living resources: *Fishing – demersal trawling*		●●	**Low**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		●	**Low**
		Waste management: *Dredge disposal*		●	**Low**
		Marine research: *Scientific and Archaeological*		●	**Low**
		Other man-made structures: *Submarine cable & pipeline operations*		●●	**Low**
	Penetration and/or disturbance of the substrate below the surface of the seabed - (Overall abrasion)		○		**No**
	Abrasion/disturbance of the surface of the substratum or seabed		○		**No**
	Changes in suspended solids (water clarity)	Production of living resources: *Aquaculture – macro-algae*	●	●●	**Low**
		Extraction of living resources: *Fishing – dredging*		●●	**Low**

		Extraction of living resources: *Fishing – demersal trawling*		●●	**Low**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		●	**Low**
		Waste management: *Sewage disposal*		●	**Low**
		Waste management: *Dredge disposal*		●	**Low**
		Transport: *Shipping – general at sea (moorings, anchorage & vessel movements)*		●●	**Low**
		Transport: *Shipping – port operations (mooring, beaching, launching, ferry route etc.)*		●●●	**Moderate**
		Recreation and leisure: *Recreational activities*		●●	**Low**
		Marine research: *Scientific and Archaeological*		●	**Low**
		Other man-made structures: *Submarine cable & pipeline operations*		●●	**Low**
	Siltation rate changes, including smothering (light)		○		**No**

	Siltation rate changes, including smothering (heavy)		○		**No**
Other physical pressures	**Litter**		?		**Unknown**
	Electromagnetic changes		○		**No**
	Underwater noise changes	Production of living resources: *Aquaculture – macro-algae*	●●	●●	**Moderate**
		Extraction of living resources: *Fishing – dredging*		●●	**Moderate**
		Extraction of living resources: *Fishing – demersal trawling*		●●	**Moderate**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		●	**Low**
		Waste management: *Sewage disposal*		●	**Low**
		Waste management: *Dredge disposal*		●	**Low**
		Transport: *Shipping – general at sea (moorings, anchorage & vessel movements)*		●●	**Moderate**
		Transport: *Shipping – port operations (mooring, beaching, launching, ferry route etc.)*		●●●	**High**
		Recreation and leisure: *Recreational activities*		●●	**Moderate**

		Marine research: *Scientific and Archaeological*		•	**Low**
		Other man-made structures: *Submarine cable & pipeline*		••	**Moderate**
	Introduction of light		?		**Unknown**
	Barrier to species movement			○	
	Death or injury by collision	Production of living resources: *Aquaculture – macro-algae*		••	**Moderate**
		Extraction of living resources: *Fishing – dredging*		••	**Moderate**
		Extraction of living resources: *Fishing – demersal trawling*		••	**Moderate**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		•	**Low**
		Waste management: *Sewage disposal*	••	•	**Low**
		Waste management: *Dredge disposal*		•	**Low**
		Transport: *Shipping – general at sea (moorings, anchorage & vessel movements)*		••	**Moderate**
		Transport: *Shipping – port operations (mooring, beaching, launching, ferry route etc.)*		•••	**High**

		Recreation and leisure: *Recreational activities*		••	**Moderate**
		Marine research: *Scientific and Archaeological*		•	**Low**
		Other man-made structures: *Submarine cable & pipeline*		••	**Moderate**
Biological pressures	**Visual disturbance (behaviour)**	Production of living resources: *Aquaculture – macro-algae*	••	••	**Moderate**
		Extraction of living resources: *Fishing*		••	**Moderate**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		•	**Low**
		Waste management: *Sewage disposal*		•	**Low**
		Waste management: *Dredge disposal*		•	**Low**
		Transport: *Shipping – general at sea (moorings, anchorage & vessel movements)*		••	**Moderate**
		Transport: *Shipping – port operations (mooring, beaching, launching, ferry route etc.)*		•••	**High**
		Recreation and leisure: *Recreational activities*		••	**Moderate**
		Marine research: *Scientific and Archaeological*		•	**Low**

		Other man-made structures: *Submarine cable & pipeline*		••	**Moderate**
	Genetic modification & translocation of indigenous species		?		**Unknown**
	Introduction or spread of non- indigenous species	Production of living resources: *Aquaculture – macro-algae*	•••	••	**Moderate**
		Extraction of living resources: *Fishing*		••	**Moderate**
		Coastal infrastructure: *Coastal docks, ports & marinas. Coastal defence & land claim*		•	**Low**
		Waste management: *Sewage disposal*		•	**Low**
		Waste management: *Dredge disposal*		•	**Low**
		Transport: *Shipping – general at sea (moorings, anchorage & vessel movements)*		••	**Moderate**
		Transport: *Shipping – port operations (mooring, beaching, launching, ferry route etc.)*		•••	**High**
		Recreation and leisure: *Recreational activities*		•••	**High**
		Marine research: *Scientific and Archaeological*		•	**Low**
		Other man-made structures: *Submarine cable & pipeline*		••	**Moderate**

	Introduction of microbial pathogens		○		**No**
	Removal of target species		○		**No**
	Removal of non- target species	Extraction of living resources: *Fishing – dredging*	●●	●●	**Moderate**
		Extraction of living resources: *Fishing – demersal trawling*		●●	**Moderate**
		Extraction of living resources: *Fishing – traps (potting/creeling)*		?	**Unknown**
		Waste management: *Dredge disposal*		●	**Low**
		Recreation and leisure: *Recreational activities*		●●	**Moderate**

Risk of Damage Assessment for Rathlin MCZ

Level of risk Key: High risk Medium risk Low risk

Table 3 Deep-sea bed (DSB) Risk of Damage Matrix

This is based on the feature Vulnerability identified in Table 1 and takes into consideration any current management measures in place which may reduce the risk of damage being incurred. This table does not cover new activities as these will not have been taken into account in the Vulnerability assessment.

DSB						
Activity	**Pressures associated with activity**	**Vulnerability**	**Is the current management adequate?‡**	**Comments**	**Level of Risk**	**Action Advised**
Extraction of living resources: *Fishing – dredging (scallops)*	**De-oxygenation**	**Low**	No	There is a voluntary ban on the use of mobile gear within the SAC. However, there is no site specific management of this activity in place.	**Moderate**	- Remove or avoid pressures associated with dredging within the MCZ where is likely to impact the DSB feature
	Physical change (to another seabed type)	**Moderate**			**Moderate**	
	Siltation rate changes, including smothering (heavy)	**Low**			**Moderate**	
	Removal of non-target species	**Low**			**Moderate**	

‡ This does not refer to any future activities or situations where active management is not required.

Extraction of living resources: *Fishing – demersal trawling*	**Physical change (to another seabed type)**	**Moderate**	No	There is a voluntary ban on the use of mobile gear within the SAC. However, there is no site specific management of this activity in place.	**Moderate**	- Remove or avoid pressures associated with demersal trawling within the MCZ where is likely to impact the DSB feature
	Abrasion/disturbance of the surface of the substratum or seabed	**Low**			**Moderate**	
	Siltation rate changes, including smothering (heavy)	**Low**			**Moderate**	
	Removal of non-target species	**Low**			**Moderate**	
Marine research: *Scientific and Archaeological*	**Abrasion/disturbance of the surface of the substratum or seabed**	**Low**	Yes	New activities inside the MCZ require future management action (licensing/permits).	**Low**	- No additional management is required
	Siltation rate changes, including smothering (heavy)	**Low**			**Low**	

Table 4 Black guillemot (*Cepphus grylle*) (BG) Risk of Damage Matrix

This is based on the feature Vulnerability identified in Table 2 and takes into consideration any current management measures in place which may reduce the risk of damage being incurred. This table does not cover new activities as these will not have been taken into account in the Vulnerability assessment.

BG						
Activity	**Pressures associated with activity**	**Vulnerability**	**Is the current management adequate?[§]**	**Comments**	**Level of Risk**	**Action Advised**
Production of living resources: *Aquaculture – macro-algae*	**Water flow (tidal current) changes (including sediment transport considerations)**	**Low**	Yes	There is one licensed site in the MCZ. However, new developments, expansion or relocation applications require future management action (licensing/permits).	**Low**	- No additional management is required
	Wave exposure changes	**Low**			**Low**	
	Habitat structure changes	**Low**			**Low**	
	Changes in suspended solids (water clarity)	**Low**			**Low**	
	Underwater noise changes	**Moderate**			**Low**	
	Death or injury by collision	**Moderate**			**Low**	

[§] This does not refer to any future activities or situations where active management is not required.

	Visual disturbance (behaviour)	**Moderate**			**Low**	
	Introduction or spread of non-indigenous species	**Moderate**			**Low**	
Extraction of living resources: *Fishing – dredging (scallops)*	**Synthetic compound contamination**	**Low**	No	There is a voluntary ban on the use of mobile gear within the SAC. However, there is no site specific management of this activity in place.	**Moderate**	- Remove or avoid pressures associated with dredging within the MCZ where is likely to impact the BG feature
	Physical change (to another seabed type)	**Low**			**Moderate**	
	Habitat structure changes	**Low**			**Moderate**	
	Changes in suspended solids (water clarity)	**Low**			**Moderate**	
	Underwater noise changes	**Moderate**			**Moderate**	
	Death or injury by collision	**Moderate**			**Moderate**	
	Visual disturbance (behaviour)	**Moderate**			**Moderate**	
	Introduction or spread of non-indigenous species	**Moderate**			**Moderate**	
	Removal of non-target species	**Moderate**			**Moderate**	

Extraction of living resources: *Fishing – demersal trawling*	**Physical change (to another seabed type)**	**Low**	No	There is a voluntary ban on the use of mobile gear within the SAC. However, there is no site specific management of this activity in place.	**Moderate**	- Remove or avoid pressures associated with demersal trawling within the MCZ where is likely to impact the BG feature
	Habitat structure changes	**Low**			**Moderate**	
	Changes in suspended solids (water clarity)	**Low**			**Moderate**	
	Underwater noise changes	**Moderate**			**Moderate**	
	Death or injury by collision	**Moderate**			**Moderate**	
	Visual disturbance (behaviour)	**Moderate**			**Moderate**	
	Introduction or spread of non-indigenous species	**Moderate**			**Moderate**	
	Removal of non-target species	**Moderate**			**Moderate**	
Coastal infrastructure: *Coastal docks, ports & marinas*	**Water flow (tidal current) changes (including sediment transport considerations)**	**Low**	Yes	New developments require future management action (licensing/permits).	**Low**	- No additional management is required
	Wave exposure changes	**Low**			**Low**	

	Synthetic compound contamination	**Low**			**Low**	
	Nutrient enrichment	**Low**			**Low**	
	Physical change (to another seabed type)	**Low**			**Low**	
	Habitat structure changes	**Low**			**Low**	
	Changes in suspended solids (water clarity)	**Low**			**Low**	
	Underwater noise changes	**Low**			**Low**	
	Death or injury by collision	**Low**			**Low**	
	Visual disturbance (behaviour)	**Low**			**Low**	
	Introduction or spread of non-indigenous species	**Low**			**Low**	
Waste management: *Sewage*	**Synthetic compound contamination**	**Low**	Yes	New developments require future management action	**Low**	- No additional management is required
	Nutrient enrichment	**Low**			**Low**	

disposal	**Changes in suspended solids (water clarity)**	**Low**		(licensing/permits).	**Low**	
	Underwater noise changes	**Low**			**Low**	
	Death or injury by collision	**Low**			**Low**	
	Visual disturbance (behaviour)	**Low**			**Low**	
	Introduction or spread of non-indigenous species	**Low**			**Low**	
Waste management: *Dredge disposal*	**Synthetic compound contamination**	**Low**	Yes	New developments require future management action (licensing/permits).	**Low**	- No additional management is required
	Nutrient enrichment	**Low**			**Low**	
	Habitat structure changes	**Low**			**Low**	
	Changes in suspended solids (water clarity)	**Low**			**Low**	
	Underwater noise changes	**Low**			**Low**	
	Death or injury by collision	**Low**			**Low**	
	Visual disturbance (behaviour)	**Low**			**Low**	

	Introduction or spread of non-indigenous species	**Low**			**Low**	
	Removal of non-target species	**Low**			**Low**	
Transport: *Shipping – general at sea (moorings, anchorage & vessel movements*	**Synthetic compound contamination**	**Low**	No	No management of this activity in place.	**Moderate**	- Remove or avoid – shipping within the MCZ where is likely to impact the BG feature Anchoring in emergency situations will not be restricted
	Changes in suspended solids (water clarity)	**Low**			**Moderate**	
	Underwater noise changes	**Moderate**			**Moderate**	
	Death or injury by collision	**Moderate**			**Moderate**	
	Visual disturbance (behaviour)	**Moderate**			**Moderate**	
	Introduction or spread of non-indigenous species	**Moderate**			**Moderate**	
Transport: *Shipping – port operations (mooring,*	**Wave exposure changes**	**Moderate**	Yes	New activities inside the MCZ require future management action	**Low**	- No additional management is required
	Synthetic compound contamination	**Moderate**			**Low**	

beaching, launching, ferry route etc.)	**Changes in suspended solids (water clarity)**	**Moderate**		(licensing/permits).	**Low**	
	Underwater noise changes	**High**			**Low**	
	Death or injury by collision	**High**			**Low**	
	Visual disturbance (behaviour)	**High**			**Low**	
	Introduction or spread of non-indigenous species	**High**			**Low**	
Recreation and leisure: ***Recreational activities***	**Changes in suspended solids (water clarity)**	**Low**	No	No management of this activity in place.	**Moderate**	- Remove or avoid recreation and leisure pressures within the MCZ where is likely to impact the BG feature Anchoring in emergency situations will not be restricted
	Underwater noise changes	**Moderate**			**Moderate**	
	Death or injury by collision	**Moderate**			**Moderate**	
	Visual disturbance (behaviour)	**Moderate**			**Moderate**	
	Removal of non-target species	**Moderate**			**Moderate**	
Marine research:	**Habitat structure changes**	**Low**	Yes	New activities inside the MCZ require	**Low**	- No additional management is

Scientific and Archaeological	**Changes in suspended solids (water clarity)**	**Low**		future management action (licensing/permits).	**Low**	required
	Underwater noise changes	**Low**			**Low**	
	Death or injury by collision	**Low**			**Low**	
	Visual disturbance (behaviour)	**Low**			**Low**	
	Introduction or spread of non-indigenous species	**Low**			**Low**	
Other man-made structures: *Submarine cables & pipelines operations*	**Physical change (to another seabed type)**	**Low**	Yes	New developments require future management action (licensing/permits).	**Low**	- No additional management is required
	Habitat structure changes	**Low**			**Low**	
	Changes in suspended solids (water clarity)	**Low**			**Low**	
	Underwater noise changes	**Moderate**			**Low**	
	Death or injury by collision	**Moderate**			**Low**	
	Visual disturbance (behaviour)	**Moderate**			**Low**	

	Introduction or spread of non-indigenous species	**Moderate**			**Low**	
Predation on nests in breeding season by ferrets, rats and cats	**Introduction or spread of non-indigenous**	**High**	No	No management of this activity in place.	**High**	- Remove or avoid

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