

Marine Conservation Zone Assessment

Commercial fishing within Marine Protected Areas (MPAs) in the Northern Ireland offshore region

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Photograph attribute: Good Food Ireland®



Department of
**Agriculture, Environment
and Rural Affairs**

An Roinn

**Talmhaíochta, Comhshaoil
agus Gnóthaí Tuaithe**

Department o'

**Fairmin, Environment
an' Kintra Matthers**

www.daera-ni.gov.uk

Marine Conservation Zone Assessment

Section 125 of the Marine and Coastal Access Act 2009 places a duty on public authorities that have the function of determining an application for authorisation of doing an act, and if the act is capable of affecting (other than insignificantly) –

- i. The protected features of a Marine Conservation Zone (MCZ);
- ii. Any ecological or geomorphological process on which the conservation of any protected features of an MCZ is (wholly or in part) dependent.

Notes:

1. The onus will be on the applicant to supply the relevant information to the public authority and conservation advisers from the Department in order to progress an application through the assessment process.

2. Where another marine protected area overlaps an MCZ, the MCZ assessment process will not be replaced for other necessary tests (e.g. HRA), it will sit alongside those.

3. The Marine and Coastal Access Act 2009 does not provide any legislative requirement for explicit consideration of in combination or cumulative impact assessment to be undertaken when assessing the impacts of licensable activities upon an MCZ. However, in order for the public authority to fully discharge its duties under section 58 of the Marine and Coastal Access Act (2009), section 58 requires public authorities to take authorisation decisions in accordance with the appropriate marine policy documents. The UK Marine Policy Statement sets out high level principles for decision making (Section 2.3.2) and this includes the taking into account any multiple and cumulative impacts of proposals, in light of other projects and activities, when considering potential benefits and adverse effects. Consideration of cumulative impact is also a core policy in the draft Marine Plan for Northern Ireland (April 2018); according to section 139 & 145, public authorities should consider all cumulative impacts of a proposal through the decision-making process.

4. The public authority must have regard to any advice or guidance given by the Department. If, in the opinion of the Department, the public authority fails to act in accordance with advice or guidance given by the Department, or to comply with its duties regarding MCZs (Section 22&23), the Department must request from the public authority an explanation for failure. The public authority must provide the Department with such an explanation in writing within the period of 28 days from the date of the request.

5. Information on MCZs in the Northern Ireland (NI) inshore region and the UK offshore region can be found at the following links. These pages provide information on location of sites, designated features, conservation objectives and potential management options.

<https://www.daera-ni.gov.uk/articles/marine-conservation-zones>

<https://jncc.gov.uk/our-work/marine-conservation-zones/>

Screening

All applications to be screened to determine whether section 125 of the Marine and Coastal Access Act 2009 should apply to the application.

Name of Project or Plan.

Commercial fishing (using demersal mobile gear) within the Marine Conservation Zones (MCZs) in the Northern Ireland offshore region (beyond 12nm).

(i) Application number/reference.

(ii) Brief description of the plan/project.

The Marine and Coastal Access Act 2009¹ provides the legal basis for designating MCZs in Northern Ireland offshore waters, whilst fishing activities in the offshore region is devolved and are regulated under the Fisheries Act 2020² through an amendment to the Marine and Coastal Access Act 2009.

South Rigg and Queenie Corner MCZ aim to contribute to the achievement of GES under the UK Marine Strategy Regulations 2010³. These sites also contribute to OSPAR and the Convention on Biological Diversity (CBD) by protecting vulnerable habitats such as sea-pen and burrowing megafauna as well as subtidal mud.

However, the Joint Nature Conservation Committee (JNCC) reports that most features in these sites are in unfavourable condition and require recovery to favourable condition^{4,5}. This involves reducing or removing pressures resulting from uses and activities that impact the habitat features with aims to stabilise or increase habitat extent and preserve or restore their biological communities. The main threat to these sites is the use of demersal mobile fishing gear (dredging or trawling) on the protected features, and JNCC recommend managing this activity to enable the MCZs to achieve their conservation objectives.

¹ [Marine and Coastal Access Act \(2009\)](#)

² [Fisheries Act 2020](#)

³ [The Marine Strategy Regulations 2010](#)

⁴ [South Rigg Conservation Advice Statements](#)

⁵ [Queenie Corner Conservation Advice Statements](#)

This MCZ assessment will determine whether mobile demersal gear fishing activities are likely to have a significant effect on the site's designated features. Where such activities are deemed not compatible with the MCZ conservation objectives, the Department is legally obliged to introduce appropriate management measures to protect the habitat features.

(iii) Name and location of the MCZ site(s) potentially affected.

South Rigg MCZ

Area: 143km²

Location (centroid): 54° 23.096' N 005° 0.022' W

Link: <https://jncc.gov.uk/our-work/south-rigg-mpa/>

Queenie Corner MCZ

Area: 146km²

Location (centroid): 53° 49.506' N 005° 13.087' W

Link: <https://jncc.gov.uk/our-work/queenie-corner-mpa/>

(v) Description of MCZ site(s).

South Rigg MCZ

South Rigg MCZ is located in the western Irish Sea approximately 23km west of the Isle of Man. It spans an area of 143km and depth ranges from 50-150m. Designated in 2019, the site affords protection to a range of habitats (see map A1 in [Annex 1](#)) which consequently support a biodiverse range of species. It was primarily chosen for its subtidal mud habitat and sea-pen and burrowing megafauna communities features; this MCZ contributes 12% of subtidal mud (EUNIS level 3) associated with protected seabed in NI, and 0.91% within the Irish Sea charting progress 2 (CP2) region. The subtidal mud and sea-pen and burrowing megafauna features are widespread throughout the site which is currently part of the Irish Sea *Nephrops* fishery. These sedimentary features are characterized by mounds and burrows which are created by bioturbating species including the crustaceans *Callianassa subterranea* and *Nephrops norvegicus*; the slender sea-pen *Virgularia mirabilis* is also an

important component of these habitats. Other sedimentary features include subtidal sand, subtidal coarse sediment and subtidal mixed sediment. These habitats are home to species such as anemones, starfish and urchins, clams and cockles. The moderate energy circalittoral rock feature is home to a range of species including sponges, anemones, soft corals including dead man’s fingers *Alcyonium digitatum*, and crustaceans such as the squat lobster *Munida rugosa*. The MCZ provides important ecosystem services and conservation benefits; by providing a habitat for a variety of marine fauna it enhances prey availability for commercially important fish species and provides an area of foraging for seabirds and marine mammals. Additionally, the site plays a role in climate regulation by sequestering carbon in its muddy sediments.

Table 1: South Rigg MCZ features, condition status and conservation objectives⁶.

Feature	Current Condition	Conservation Objective
Moderate energy circalittoral rock	Favourable	Maintain
Subtidal coarse sediment	Unfavourable	Recover
Subtidal sand	Unfavourable	Recover
Subtidal mud	Unfavourable	Recover
Subtidal mixed sediment	Favourable	Maintain
Sea-pen and burrowing megafauna communities	Unfavourable	Recover

⁶ [South Rigg MPA: Conservation Objectives](#)

Queenie Corner MCZ

Queenie Corner MCZ is located in the western Irish Sea and was designated an MCZ in 2019 for offshore mud habitat (see map A2 [Annex 1](#)) with sea-pen and burrowing megafauna communities. Spanning an area of 146km² and ranging in depth from 25-50m, the subtidal mud supports a diverse range of species many of which bioturbate the sediments. Characteristic species range from the slender seapen *Virgularia mirabilis*, crustaceans including *Nephrops norvegicus*, and *Calocaris macandreae*. A variety of worms including the peacock worm *Sabella pavonina* and volcano worm *Maxmuelleria lankesteri*, echinoderms such as brittlestars and heart urchins *Brissopsis lyrifera* and burrowing anemones have also been recorded. This MCZ contributes 16% of subtidal mud (EUNIS level 3) associated with protected seabed in NI, and 1.67% within Irish Sea charting progress 2 (CP2) region. The subtidal mud and sea-pen and burrowing megafauna features are widespread throughout the site which is currently part of the Irish Sea *Nephrops* fishery. The MCZ provides important ecosystem services and conservation benefits; by providing a habitat for a variety of marine fauna it enhances prey availability for commercially important fish species and provides an area of foraging for seabirds and marine mammals. Additionally, the site plays a role in climate regulation by sequestering carbon in its muddy sediments.

Table 2: Queenie Corner MCZ features, condition status and conservation objectives⁷.

Feature	Condition	Conservation Objective
Subtidal mud	Unfavourable	Recover
Sea-pen and burrowing megafauna communities	Unfavourable	Recover

⁷ [Queenie Corner MPA: Conservation Objectives](#)

(vi) Summary of activities from the plan or project that may potentially affect the MCZ.

South Rigg MCZ

Offshore MPA conservation guidance is produced using a pressure-based approach; if a feature is exposed to a pressure that it is sensitive to it is deemed vulnerable and likely to be impacted. This results in unfavourable condition status and consequently the feature conservation objective is set to recover the feature.

The Department carried out an analysis of demersal mobile fishing activity at the MCZ for each year between 2014-2023 (example map B1 [Annex B](#)) and results indicated that the level of exposure to fishing activity was variable across the protected features and over time. Species and habitat data were collated from various sources including a recent research cruise by JNCC which provided insight into the characteristic species, and spatial variation in habitat types.

Pressures associated with demersal mobile gear were identified from the JNCC Pressures and Activities database⁸ and information from Marine Evidence Sensitivity Review Assessment⁹ (MarESA) for the habitats were related to each pressure to interpret the likely impacts occurring at the MCZ features. In addition to removal of target and non-target species this type of fishing activity exerts pressures on the physical habitats and their benthic assemblages; abrasion and penetration of the seabed substrate causes direct mortality, injury and increased levels of predation to biota. Gear interaction with the seabed alters sediment character and composition which can make it unsuitable for the burrowing species that inhabit the soft sediments within the MCZ. Many of the species that characterise the site have life history traits that make them vulnerable to impacts from demersal mobile gear e.g. relatively long lifespans, limited mobility, near surface dwelling, sediment preferences etc. Consequently, they are not adapted to disturbance and take a prolonged time to recover following removal of pressures from demersal fishing.

It was concluded that the use of demersal mobile fishing gear is impacting four of the six habitat features of South Rigg MCZ and they are therefore in unfavourable condition (sea-pen and burrowing megafauna, subtidal mud, sand and coarse sediment). The condition

⁸ [Marine Pressures-Activities Database \(PAD\) v1.5 2022](#)

⁹ [Marine Evidence based Sensitivity Assessment \(MarESA\)](#)

status of the MCZ features has remained unchanged since designation of the site in 2019¹⁰ as the unfavourable features remain exposed to pressures associated with mobile demersal fishing and therefore they are not meeting their conservation objectives¹¹. Although the OSPAR Benthic Habitat (BH3) Indicator^{12,13} concluded that the level of disturbance to the designated features of South Rigg MCZ was higher than the Department's assessment, the results aligned with regards a general picture that the sediment features were most at risk and that seabed disturbance from fishing activity was highest in areas of Sea-pen and burrowing megafauna communities.

Mobile demersal fishing represents a threat to the extent and character of the physical habitats and to the structure and function of the communities that inhabit them. The Department has a statutory obligation to manage this activity to reduce or remove pressures to ensure conservation objectives will be met.

Climate change also introduces pressures that may exacerbate the ecological impacts of mobile demersal fishing, particularly in sensitive benthic habitats such as sea pen and burrowing megafauna communities. For example, climate change may result in warmer oceans, deoxygenation of seawater, ocean acidification, altered sediment chemistry and nutrient cycles etc. These pressures interact in complex ways, potentially reducing the resilience of marine ecosystems and impairing their capacity to recover from disturbance.

To conclude, although mobile demersal fishing is not the sole threat to the integrity of the MCZ it exerts pressure on the extent and character of the physical habitats and to the structure and function of the communities that inhabit them.

¹⁰ [Post Consultation Advice \(JNCC 2018\)](#)

¹¹ [Statements on conservation benefits, condition & conservation measures for South Rigg MCZ JNCC 2021](#)

¹² [Extent of Physical Disturbance to Benthic Habitats: Fisheries with mobile bottom-contacting gears](#)

¹³ [OSPAR Quality Status Reports 2023](#)

Queenie Corner MCZ

Offshore MPA conservation guidance is produced using a pressure-based approach; if a feature is exposed to a pressure that it is sensitive to, it is deemed vulnerable and likely to be impacted. This results in an unfavourable condition status being assigned and consequently the conservation objective target is to recover to favourable condition.

The Department carried out an analysis of demersal mobile fishing activity within the MCZ for each year between 2014-2023 (example map B1 Annex B) and results indicated that the features were exposed to a medium level of fishing activity. This analysis agreed with the OSPAR Benthic Habitat (BH3) Indicator¹⁴ which concludes that there is high level of disturbance at Queenie Corner MCZ and that seabed disturbance from fishing activity was highest in areas of offshore circalittoral mud and Sea-pen and burrowing megafauna communities¹⁵. Although there was less intense fishing pressure compared to the start of the study period/prior to site designation¹⁶, the use of demersal mobile gear is still impacting the protected features of Queenie Corner MCZ; both the subtidal mud habitat and sea-pen and burrowing megafauna features are in unfavourable condition therefore, the features are not meeting their conservation objectives¹⁷ (JNCC 2021) and consequently not fulfilling statutory obligation.

Species and habitat data were provided by AFBI which provided insight into the spatial and temporal variation of characteristic species and habitat.

Pressures associated with demersal mobile gear were identified from the JNCC Pressures and Activities database¹⁸ and information from Marine Evidence Sensitivity Review Assessment¹⁹ (MarESA) for the habitats that were related to each pressure to assess the likely impacts occurring within the MCZ. In addition to removal of target and non-target species, this type of fishing activity exerts pressures on the physical habitats and their benthic assemblages; abrasion and penetration of the seabed substrate causes direct mortality, injury and leads to increased levels of predation to biota. Gear interaction with the

¹⁴ [Extent of Physical Disturbance to Benthic Habitats: Fisheries with mobile bottom-contacting gears](#)

¹⁵ [OSPAR Quality Status Reports 2023](#)

¹⁶ [Post Consultation Advice \(JNCC 2018\)](#)

¹⁷ [Statements on conservation benefits, condition & conservation measures for Queenie Corner MCZ JNCC 2021](#)

¹⁸ [Marine Pressures-Activities Database \(PAD\) v1.5 2022](#)

¹⁹ [Marine Evidence based Sensitivity Assessment \(MarESA\)](#)

seabed alters sediment composition and character which can make it unsuitable for the burrowing species that inhabit the soft sediments at the MCZ. Many of the species that characterise the site have life history traits that make them vulnerable to impacts from demersal mobile gear e.g. relatively long lifespans, limited mobility, near surface dwelling, sediment preferences etc. Consequently, they are not adapted to disturbance and take a prolonged time to recover following removal of pressures from demersal fishing.

Climate change also introduces pressures that may exacerbate the ecological impacts of mobile demersal fishing, particularly in sensitive benthic habitats such as sea pen and burrowing megafauna communities. For example, climate change may result in warmer oceans, deoxygenation of seawater, ocean acidification, altered sediment chemistry and nutrient cycles etc. These pressures interact in complex ways, potentially reducing the resilience of marine ecosystems and impairing their capacity to recover from disturbance.

To conclude, although mobile demersal fishing is not the sole threat to the integrity of the MCZ, it exerts pressure on the extent and character of the physical habitats and to the structure and function of the communities that inhabit them.

(vii) Is the activity capable of affecting (other than insignificantly) the protected features of the MCZ?

If the answer is “no” proceed to next question; if “yes” detail the features and proceed to the next question.

Yes – the following statement references evidence from MarESA (Tyler-Walters et al., 2018).

Direct contact of benthic species with the mobile demersal gear can lead to death or injury of individuals. Demersal trawl gear abrades the seabed surface, and some parts may penetrate by approximately 2.6cm. Although the sea pen *Virgularia mirabilis* has some ability to retract and avoid contact with gear, it and other characteristic species such as *Amphiura filiformis* have fragile bodies making them vulnerable to damage from physical disturbance. Despite some ability to regenerate, this is energetically costly and injured individuals often attract increased levels of predation. As a knock-on effect, substantial changes in the abundance of the characterising species can lead to an altered community structure and function. Species

that live or forage on or near the surface (e.g. *Brissopsis lyrifera*, *Amphiura spp*) are particularly vulnerable to mechanical disturbances such as abrasion and penetration of the seabed.

Burrowing species such as *Nephrops norvegicus*, *Calocaris macandreae*, and *Maxmuelleria lankesteri* benefit somewhat from their protective burrows which typically extend below trawl penetration depths. However, demersal gear interaction with the seabed can alter sediment composition by resuspending sediments and affecting siltation rates. The mud-to-sand ratio of sediment is altered by demersal mobile gear, and this can affect burrow stability. Many of the species associated with the protected features have strong preferences for sediment types therefore, if the substrate is altered sufficiently, it would no longer suit the assemblage and consequently, community structure will be impacted.

Characteristic polychaetes such as *Levinsenia gracilis* recover quickly from disturbance due to their short life spans however other species such as bivalve molluscs (e.g. *Abra nitida*, *Kuriella bidentata*) take longer to recover, therefore disturbance from demersal fishing can lead to altered community structures dominated by polychaetes. Some of the key bioturbating species have relatively long lifespans such as *Maxmuelleria lankesteri*, *Callianassa subterranea*, *Nephrops norvegicus*. Overall, life history traits of the protected feature assemblages (e.g. fragile bodies, limited mobility, near surface dwelling) make the protected features sensitive to disturbance, and traits such as longevity, late maturity and variable recruitment imply that population recovery post-disturbance may be protracted. Notably, current evidence on recovery of mud habitats is largely derived from exploited fishing grounds which may already have degraded communities, possibly biasing assessments of community sensitivity. However, discrepancies in the literature likely reflect differences in fishing intensity, historical disturbance, and methodological approaches as protected areas, such as those created by shipwrecks typically support higher benthic diversity and abundance.

South Rigg MCZ

Vulnerability assessment results ([Annex C](#)) conclude that the habitat features of South Rigg MCZ have moderate to high vulnerability to pressure from mobile demersal fishing activities (table 3).

Table 3: Vulnerability assessment results for the protected features of South Rigg MCZ.

MCZ Feature	Vulnerability Assessment
Moderate energy circalittoral rock	Moderate
Subtidal mixed sediment	Moderate
Subtidal coarse sediment	High
Subtidal sand	High
Subtidal mud	High
Sea-pen and burrowing megafauna	High

The features are at a high level of risk from the following pressures associated with mobile gear fishing: introduction of invasive non-indigenous species, hydrocarbon and PAH contamination, synthetic compound contamination, transition elements and organo-metal contamination, penetration or disturbance of the substratum subsurface, physical change to another seabed or sediment type. They are also at moderate level of risk to introduction of microbial pathogens, removal of target and non-target species, deoxygenation, organic enrichment, abrasion/disturbance of the surface of the substratum or seabed and light smothering and siltation rate changes.

Queenie Corner MCZ

Vulnerability assessment results conclude that the habitat features of Queenie Corner MCZ are highly vulnerable to pressures associated with mobile demersal fishing activities. These pressures include hydrocarbon and PAH contamination, synthetic compound contamination, transition elements and organo-metal contamination, penetration or disturbance of the substratum subsurface, physical change to another seabed or sediment type. They are also

at moderate risk from introduction of microbial pathogens, removal of non-target species, deoxygenation, organic enrichment, abrasion/disturbance of the surface of the substratum or seabed, and penetration or disturbance of the substratum subsurface.

Table 4: Vulnerability assessment results for the protected features of Queenie Corner MCZ.

MCZ Feature	Vulnerability Assessment
Subtidal mud	High
Sea-pen and burrowing megafauna	High

(viii) Is the activity capable of affecting (other than insignificantly) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent?

If the answer is “no” to vii and viii, no further assessment is required.

If the answer is “yes”, detail the processes.

If the answer is “yes” to either vii or viii proceed to Stage 1 assessment.

Yes

Commercial fishing activities, with mobile bottom gear (trawling and dredging) exert a range of physical, biological and chemical pressures on the marine habitats features and characteristic species of the MCZ. Mobile bottom gear is proposed to be the most environmentally damaging form of fishing; it can significantly impact the extent and character of the physical seabed habitats and alter the structure and functions of the ecological communities.

The hydrodynamic environment is a defining attribute of benthic habitats, since burrowing megafauna and mud communities are adapted to life in environments with low levels of natural disturbance, mobile demersal fishing can seriously impact this MCZ feature. Direct contact with the mobile demersal gear can lead to death or injury of species through abrasion and penetration of the seabed. Mobile demersal fishing gear interaction with sedimentary habitats can alter the seabed type and sediment composition by resuspending sediment in the water column and altering siltation rates. The characteristic bioturbating species of the MCZ faunal assemblage increase the complexity of the sedimentary habitats and provide environmental niches for other species to inhabit, in addition to facilitating nutritional and

chemical exchanges in the sediments. Loss of key species through targeted catch or by-catch also has the potential to cause deterioration of community structure and function.

Supporting processes, including water quality, are impacted by physical and chemical pressures such as, increased nutrients or sediment and introduction of contaminants. Deterioration of water quality impacts the habitat features and their assemblages which impedes full ecological function.

Varying levels of sensitivities to mobile demersal fishing pressures have been developed by the Marine Evidence based Sensitivity Assessment (MarESA) (Tyler-Walters et al., 2018).

The Department has reviewed the sensitivity of all designated features within the MCZ sites to fishing pressures using the MarESA approach (results in Annex C). This approach takes the degree of sensitivity of each habitat and species and applies an exposure level based on the current level of fishing pressure (example in Annex B). This assigns a level of vulnerability to each feature based on the current fishing pressure. Risk of damage to the features was determined by following the DAERA guidance for developing management options for MPAs.

<https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/mcz-guidelines-for-conservation-objectives-information-on-activities-and-management.PDF>

STAGE 1 MCZ ASSESSMENT

In the Stage 1 assessment the public authority must satisfy the two tests detailed below. If unable to satisfy these two tests then a Stage 2 MCZ assessment will be required.

At the start of the Stage 1 assessment the public authority must notify the Marine Conservation and Reporting Branch. Consultation advice received from the Department, information supplied by the applicant and any other relevant information should be used to inform the Stage 1 assessment.

Further information on the formal notification to Department can be found in the guidance document.

TEST 1

Based on the evidence received, is the public authority satisfied that there is no significant risk of the activity hindering the achievement of the conservation objectives stated for the MCZ? and

Can the public authority exercise its functions in a manner that it considers best furthers, or least hinders, the achievement of the conservation objectives of the MCZ site?

South Rigg MCZ - No

Fishing activities detailed above are likely to have a significant adverse effect on the designated features of South Rigg MCZ, based on the result of the vulnerability and risk of damage assessment described above.

The Department cannot exercise its function to further the conservation objectives of South Rigg MCZ without introducing fisheries management measures.

Queenie Corner MCZ - No

The Department is not satisfied that there is no significant risk of demersal mobile fishing gear hindering the achievement of conservation objectives stated for Queenie Corner MCZ.

The Department cannot exercise its function to further the conservation objectives of Queenie Corner MCZ without introducing fisheries management measures.

TEST 2

Although the person seeking an authorisation is unable to satisfy the public authority that the activity will not hinder the achievement of the conservation objectives stated for the MCZ, is there an alternative way of proceeding with the proposal which would create a substantially lower risk of hindering the achievement of the conservation objectives stated for the MCZ? This would include proceeding with it:

- in another manner or
- at another location.

If the answer is “no” to test 2, a Stage 2 assessment is required.

If the answer is “yes” to test 2, apply the changes and repeat test 1.

If the outcome is “yes” a Stage 2 assessment is not required and the authorisation process may proceed. If the answer is still “no” a Stage 2 assessment is required. Please document the steps taken in the stage 1 assessment in chronological order, detailing changes applied if test repeated.

Whole Site Management Measures for both MCZs

- Mandatory vessel position monitoring for all vessels operating in the MCZ.
- Introduce geo-fencing of MCZs (create a virtual geographic boundary that enables higher resolution VMS tracking when a vessel is within a delineated area).
- Mandatory recording of protected species that are accidentally caught and any entanglement issues; and
- The Department will continue to encourage and support the development and trialling of fishing gear that reduces unintended catch.

South Rigg MCZ

The level of fishing with demersal mobile gear within South Rigg MCZ varies across the different habitat features. The designated features subtidal coarse sediment, subtidal sand, subtidal mud, and sea-pen and burrowing megafauna communities are highly sensitive to pressures associated with demersal mobile gear and are considered to be at high risk of damage. The moderate energy circalittoral rock and subtidal mixed sediments are also sensitive to demersal mobile gear and are considered to be at moderate risk from pressure.

Table 5: Summary table of features, condition status, conservation objectives and management recommendations for South Rigg MCZ.

Feature	Current Condition	Conservation Objective	Management Recommendation
Moderate energy circalittoral rock	Favourable	Maintain	Consider change in management
Subtidal mixed sediment	Favourable	Maintain	Consider change in management
Subtidal coarse sediment	Unfavourable	Recover	Prohibit demersal mobile gear
Subtidal sand	Unfavourable	Recover	Prohibit demersal mobile gear
Subtidal mud	Unfavourable	Recover	Prohibit demersal mobile gear
Sea-pen and burrowing megafauna	Unfavourable	Recover	Prohibit demersal mobile gear

Queenie Corner MCZ

Table 6: Summary table of features, condition status, conservation objectives and management recommendations for Queenie Corner MCZ.

Feature	Current Condition	Conservation Objective	Management Recommendation
Subtidal mud	Unfavourable	Recover	Prohibit demersal mobile gear
Sea-pen and burrowing megafauna	Unfavourable	Recover	Prohibit demersal mobile gear

Mobile gear alternative proposals

The introduction of fisheries management measures would help further the conservation objectives by limiting and/or reducing the abovementioned commercial fishing pressures on the designated features assessed as having moderate/high vulnerability. This would help to decrease the risk of damage to key habitats and species within MCZs.

The removal or reduction of these pressures on fragile and/or important habitats and species through site specific fisheries regulations would contribute to maintaining or recovering the integrity of the sites, facilitate natural habitat recovery and therefore improve biodiversity and increase habitat complexity.

A summary of the pressures from mobile fishing activities that potentially affect the designated MCZ features is listed in the screening section above. The proposed management measures listed for each individual MCZ below are based on the evidence obtained from the MarESA undertaken by the Department²⁰ ([Annex C](#)). These proposed measures aim to remove/avoid the demersal mobile fishing activities which have been identified as having a detrimental effect on sensitive seabed habitats.

²⁰ [Consultation on the development of fisheries management measures for offshore MPAs](#)

Proposed Options for South Rigg MCZ

1. Prohibition of demersal mobile gear use throughout the full extent of the MCZ.
2. Prohibition of demersal mobile gear throughout the site, with the exception of 33% of mud habitat.
3. No management, only statutory monitoring of designated features to continue.

Proposed Option for Queenie Corner MCZ

1. Prohibition of demersal mobile gear use throughout the full extent of the MCZ.
2. Prohibition of demersal mobile gear throughout the site, with the exception of 33% of mud habitat.
3. No management, only statutory monitoring of designated features to continue.

These new regulations will be brought into effect through powers under section 137E of the Marine and Coastal Access Act.

The Department is responsible for enforcement within the inshore region through its Sea Fisheries Inspectorate who monitor compliance for fishing regulations including gear restrictions and spatial prohibitions. Defra is responsible for fisheries enforcement in the NI offshore region.

Monitoring and compliance may involve ecosystem survey, surveillance of fishing vessel activity through VMS data analysis and, inspection of electronic reporting and logbooks. There is potential for novel methods of monitoring to be introduced e.g. geofencing of prohibition areas. Methods such as remote sensing of satellite imagery and AIS data may also be used to monitor vessel activity in near real time (e.g. Global Fishing Watch). Breaches of regulations will lead to fines and gear seizures, license suspension or revocation, or criminal prosecution where appropriate.

The Department aims to foster stewardship of the marine environment through stakeholder engagement, in particular through the collaborative efforts of the Co-Fish group which will support co-design and management of the MPAs while ensuring socio-economic security.

STAGE 2 MCZ ASSESSMENT

The Stage 2 assessment will consider whether the conditions in section 23(7)(b) and (c) can be met. In doing so the public authority should use all information supplied by the applicant, advice from the conservation advisers from the Department and any other relevant information. Wider consultation with other advisers may also be undertaken at this stage, in particular to provide additional and specific advice on socio-economic matters.

Does the benefit to the public of proceeding with the act clearly outweigh the risk of damage to the environment that will be created by proceeding with it? (See guidance for further information.)

If the answer is “no” reject application.

If the answer is “yes” provide information and proceed to the next question.

No, the benefit to the public from permitting the use of mobile demersal fishing gear in the MCZs does not clearly outweigh the risk of damage to the MCZ protected features.

The Department is a member of the Co-Fish working group, a collaborative initiative of stakeholders with a vested interest in both fisheries and marine conservation. This forum allows co-management of the MPA network to enable sustainable fishing and protection of the marine environment.

An economic assessment of the value of fishing within the MPA network and wider Irish Sea region was commissioned by the Department in order to provide context of the monetary value of mobile demersal fishing to the NI fleet. This assessment aids the consideration of potential options for managing fishing activity and helps infer the implications of those management measures for both industry and the environment.

A baseline assessment of the monetary value of Northern Ireland’s MPA network was carried out using evaluations of broadscale habitat to provide a decision-making tool for marine spatial planning²¹. The report conveys the importance of sublittoral muds and sands for

²¹ [An Assessment of NI's Marine Natural Capital \(NI-MANACA\)](#)

delivering essential ecosystem services such as supporting biodiversity, climate regulation (through carbon sequestration), waste remediation, education and research opportunities. It also highlights that the protection and sustainable management of these habitats are critical for maintaining their ecological and economic value to NI.

The table below provides an estimate of the current natural capital value and what this value could be in 20 years’ time under both a ‘maintain’ scenario where no management is applied, and a ‘recover’ management where management measures are introduced.

HIGH LEVEL OUTPUT SUMMARY VALUES (£ million)						
	2019 value	NPV (20 yr) ‘Maintain’	NPV (20 yr) “Partial Recovery”	Uplift due to management	NPV (20 yr) ‘Full Recovery’	Uplift due to management
South Rigg MCZ	1.48	21.38	24.07	2.69	28.87	7.49
Queenie Corner MCZ	1.6	23.08	28.83	5.75	31.39	8.31
Pisces Reef	0.1	1.38	N/A	N/A	1.87	0.49
Combined	3.18	45.84	52.9	8.44	62.13	16.29

The estimates produced in this assessment are preliminary and based entirely on 2019 input data. As such, the values should be interpreted as indicative rather than definitive assessments. They are appropriate for high level comparison and for supporting early-stage planning or consultation material but should not be regarded as final valuations. The below caveats should be considered when interpreting this table.

Caveats

1. Limited Valuation Coverage

- Only 8 out of 14 societal benefits had UK-scale valuation data available.
- This means the total value of marine natural capital is likely underestimated, as key services like cultural heritage, education, and some regulating functions were excluded.

2. Benefit Transfer Limitations

- The BEACH tool relies on benefit transfer from UK-wide literature, not Northern Ireland-specific studies.
- This introduces uncertainty, as local ecological conditions, stakeholder priorities, and service delivery may differ significantly.

3. No Management Costs Included

- The Net Present Value (NPV) estimates reflect benefits only; they do not account for the costs of maintaining or restoring habitats.
- This limits the tool’s use for full cost-benefit analysis or investment planning.

4. Static Habitat Assumptions

- Habitat extent and condition are assumed to be static in the “maintain” scenario and improved in the “recovery” scenario, without modelling ecological dynamics or degradation risks.
- The tool does not simulate pressures, threats, or climate change impacts over time.

5. No Confidence Intervals or Uncertainty Metrics

- Valuation outputs are presented as point estimates (low, mid, high), but no statistical confidence intervals or sensitivity analyses are included.
- This makes it harder to assess risk or robustness of the estimates.

6. Mapping Accuracy and Ground-Truthing

- Habitat maps are based on existing datasets and may lack ground-truthing or fine-scale resolution.
- This affects the accuracy of spatial valuation and scenario modelling.

South Rigg MCZ

VMS data recorded within South Rigg MCZ between 2014-2023 indicated that varying levels of demersal trawl activity occur within the features of the MCZ (table 7).

Table 7: Level of exposure fishing pressure exerted on South Rigg MCZ habitat features.

MCZ Feature	Fishing Exposure (VMS)
Moderate energy circalittoral rock	Low
Subtidal mixed sediment	Low
Subtidal coarse sediment	High

Subtidal sand	High
Subtidal mud	Medium
Sea-pen and burrowing megafauna	Medium to High

Over the ten-year period analysed, average annual landings from demersal mobile gear within the MPA boundary was 106 tonnes. The average annual landings value of demersal catch within the MCZ boundary over the 2014-2023 period amounted to a value of £279,000.

Queenie Corner MCZ

VMS data recorded within Queenie Corner MCZ between 2014-2023 indicated that a medium level of demersal trawl activity occur within the features of the MCZ (Table 8).

Table 8: Level of exposure fishing pressure exerted on Queenie Corner MCZ habitat features.

MCZ Feature	Fishing Exposure (VMS)
Subtidal mud	Medium
Sea-pen and burrowing megafauna	Medium to High

Over the ten-year period analysed, average annual landings from demersal mobile gear within the MPA boundary was 118 tonnes. The average annual landings value of demersal catch within the MCZ boundary over the 2014-2023 period amounted to a value of £310,000.

The application for the use of mobile fishing gear within MCZs is rejected.

Can the applicant satisfy the public authority that they will undertake, or make arrangements for the undertaking of, measures of equivalent environmental benefit to the damage which the act will or is likely to have in or on the MCZ? (See guidance for further information.)

If the answer is “yes” continue with the authorisation process. Measures given by the applicant in this section must be conditioned on the authorisation, if issued.

If the answer is “no” reject application.

No, the Department is not satisfied that measures of equivalent environmental benefit to the damage which the act will or is likely to have in or on the MCZ can be undertaken. Examples of Measures of equivalent environmental benefit would include the identification and subsequent designation of the same feature type elsewhere within the NI offshore area. However, this is not possible due to the limited area available in the offshore region, and the reduction in availability of associated habitats and features.

The application for the use of mobile fishing gear within MCZs is rejected.

SUMMARY

Provide details of any likely in-combination effects and quantify their significance.

Sensitive benthic habitats such as sea pen and burrowing megafauna communities within Northern Ireland's offshore Marine Conservation Zones (MCZs) are exposed to a suite of compounding pressures. Pressures from demersal mobile fishing act, in-combination, with those from climate change, submarine cable development, anchorage and shipping. Additionally, developments of offshore energy infrastructure also threaten the ecological integrity and resilience of these habitats. Pressures and activities mentioned previously are considered below using the guidance from JNCC²² and MarESA²³.

Many impacts of climate change in combination with those of demersal mobile fishing can amplify ecological stress. While some species, such as *Virgularia mirabilis*, may tolerate rising temperatures, warmer waters reduce oxygen levels causing strain on a wide range of marine life. Ocean acidification impairs shell formation in calcifying species and regeneration in brittlestars, while altered sediment chemistry disrupts bioturbation and nutrient cycling. Bottom trawling exacerbates these effects by resuspending carbon-rich sediments, increasing remineralisation and carbon dioxide emissions. Climate change may also accelerate microbial activity, intensifying carbon loss and undermining the carbon sequestration potential of MCZs.

²² [Marine Pressures-Activities Database \(PAD\) v1.5 2022](#)

²³ [Marine Evidence based Sensitivity Assessment \(MarESA\)](#)

Submarine cable installation introduces physical pressures similar to those caused by demersal fishing. Installation methods such as ploughing and trenching disturb the seabed, resuspending sediments, and can lead to smothering of benthic communities or altered sediment composition. Concrete, steel or rock armour protects cables during their operation but changes the physical seabed where the structure is placed. Impacts are not limited to installation; maintenance activities throughout the cable lifespan may result in repeated disturbance. The cumulative effect of these activities poses a significant risk to sensitive habitat features. There are currently two telecommunications cables that cross through South Rigg MCZ (LANIS 2 and BT-Manx-NI)²⁴ and an electricity network cable (Western Link 2) will be built between Scotland and England, which also has the potential to pass through the MCZs.

Anchorage exerts similar types of pressures to demersal mobile fishing. Anchors and chains scour the seabed, damaging fragile species, abrading and penetrating the substratum. This interaction resuspends sediments, increasing turbidity and deposition rates, potentially smothering benthic organisms. In less dynamic mud environments, physical recovery is slow, and if sediment type is sufficiently altered, the habitat may no longer support its original assemblage. Although anchorage is not currently documented within the offshore MCZs, its occurrence would also compound existing pressures.

Shipping (vessels movements and discharges) contribute additional stress through the introduction of contaminants and pollutants which degrade habitat quality, these can include but are not limited to hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), antifoulants, and litter. Shipping also facilitates the spread of invasive non-indigenous species via ballast water and biofouling, threatening native biodiversity. Many of these pressures overlap with those from demersal fishing, increasing the cumulative burden on benthic habitats.

Offshore energy development presents further risks, particularly during construction and decommissioning phases. Activities such as dredging to prepare the seabed and placement of foundations alter the sediment structure and seabed, increasing turbidity and deposition rates. During operation the structures will modify local hydrodynamics which may affect sediment transport and habitat extent. Although currently there are no developments exerting pressure on the MCZs, both South Rigg and Queenie Corner lie within key resource areas for

²⁴ [NI Marine Map Viewer](#)

offshore wind. Any future applications will require thorough evaluation of impacts and potential mitigation measures e.g. Environmental Impact Assessment and MCZ Assessment will be required to prove conservation objectives are not compromised.

In summary, the in-combination effects of demersal mobile fishing, climate change, and other anthropogenic activities pose a significant threat to the structure and function of benthic mud habitats in Northern Ireland's offshore MCZs. These pressures are additive and often synergistic, reducing biodiversity, ecological resilience, and the ability of these habitats to recover from disturbance. Strategic management and robust environmental assessments are essential to safeguard these vulnerable ecosystems.

List of Agencies / Organisations Consulted:

- Co-Fish stakeholder group
- DAERA Marine and Fisheries Division: Marine Conservation Branch, Marine Evidence Branch, Sea Fisheries Inspectorate
- Seafish
- Cefas
- Agri-Food and Biosciences Institute (AFBI)
- Joint Nature Conservation Committee (JNCC)
- Scottish Government

MCZ Assessment Summary decision

Demersal fishing activities detailed above have been found to have a significant likelihood of negative impact on the protected site features of MCZs, therefore a full assessment was carried out. The physical abrasion from mobile bottom contact gear on sensitive marine species and habitats has been assessed as high through a MarESA assessment. The ongoing pressure exerted from fishing also reduces the ability of features to enter a recovery phase, prohibiting the conservation objectives of these sites from being achieved. It is therefore recommended that mobile demersal fishing activities within the listed MCZs cannot be undertaken in another manner in order to create a substantially lower risk of hindering the achievement of the conservation objectives. The benefits to the public do not outweigh the costs to the environment.

If applicable, list the condition(s) detailed in the stage 2 assessment which should be enforced through the applicable licence.

N/A

Data collected to carry out the MCZ assessment

Who carried out the assessment?

If you are an agent or consultant on behalf of a public authority please give your details. Also detail the responsible person in the public authority who commissioned the assessment.

DAERA Marine and Fisheries Division: Marine Conservation Branch

Sources of data used.

- [South Rigg MPA: Background Information](#)
- [South Rigg MPA: Conservation Objectives](#)
- [South Rigg MPA: Supplementary Advice on the Conservation Objectives \(SACO\)](#)
- [South Rigg MPA: Conservation Advice Statements](#)
- [South Rigg MPA: Advice on Operations](#)
- [Queenie Corner MPA: Background Information](#)
- [Queenie Corner MPA: Conservation Objectives](#)
- [Queenie Corner MPA: Supplementary Advice on the Conservation Objectives \(SACO\)](#)
- [Queenie Corner MPA: Conservation Advice Statements](#)
- [Queenie Corner MPA: Advice on Operations](#)
- [JNCC MPA Mapper](#)
- [JNCC Marine Pressures-Activities Database \(PAD\) v1.5 2022](#)
- Vessel Monitoring System (VMS) fishing activity data for the NI offshore region between 2014-2023.
- [OSPAR Extent of Physical Disturbance to Benthic Habitats - Data Snapshot](#)
- Biotope Data from Marine Recorder (provided by CEDaR)
- Species, habitat and sediment data from JNCC 2024 Cruise Survey (South Rigg MCZ)
- AFBI *Nephrops* Burrow Counts 2011-2024
- Under Water Towed Video (UWTV) data from AFBI Cruise CO2624 (Queenie Corner MCZ)

- [JNCC UK Atlas of Seabed Habitats \(UKASH\)](#)
- [JNCC's Scientific advice on offshore Marine Conservation Zones proposed for designation in 2019. \(JNCC 2018\)](#)
- [Alternative Marine Conservation Zones in Irish Sea mud habitat: Assessment of habitat extent and condition at "Queenie Corner" and assessment of fishing activity at potential MCZs. \(AFBI 2016\)](#)
- [JNCC Report No. 410 North West Irish Sea Mounds: Hard and soft substrata habitats \(Mellor et al 2008\)](#)
- [JNCC Report No. 608 Marine Conservation Zone Benthic Community Analysis \(Sotheran et al 2017\)](#)
- [Guidance on the Development of Conservation Objectives and Potential Management Options. \(DAERA 2015\)](#)
- [MARLIN](#)
- DAERA risk assessment matrix of fishing activities and protected features ([MarESA assessment tables](#))
- [Burdon, D., Barnard, S., Strong, J.A., & Atkins, J.P., 2023. An Assessment of Northern Ireland's Marine Natural Capital \(NI-MANACA\). Report to AFBI by Daryl Burdon Ltd., Willerby, UK \(Report No. DB Ltd. 017/2020\).](#)
- Peer-reviewed literature
- Seafish Economic Assessment²⁵

²⁵ [Consultation on the development of fisheries management measures for offshore MPAs](#)

Level of assessment completed.

Stage 1 MCZ assessment for demersal mobile fishing activities.

Where can the full results of the assessment be accessed and viewed?

Must be an official address of the public authority.

Marine Conservation Branch,
DAERA Marine and Fisheries Division,
Department of Agriculture, Environment and Rural Affairs
Clare House
303 Airport Road West
Belfast BT3 9ED

Annex A – Habitat Maps of Marine Conservation Zones

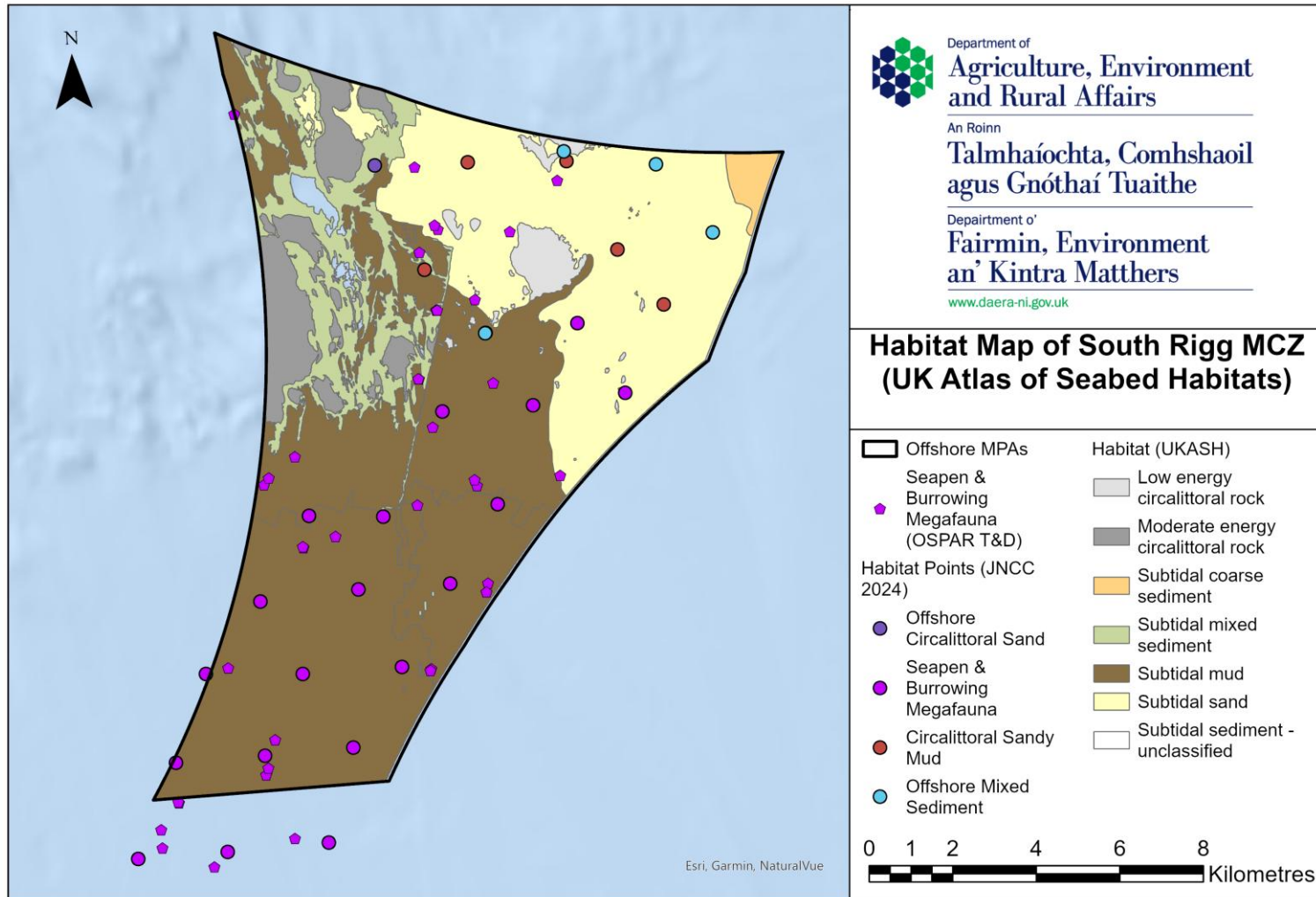


Figure A1: South Rigg MCZ feature/habitat map (UK Atlas of Seabed Habitats).

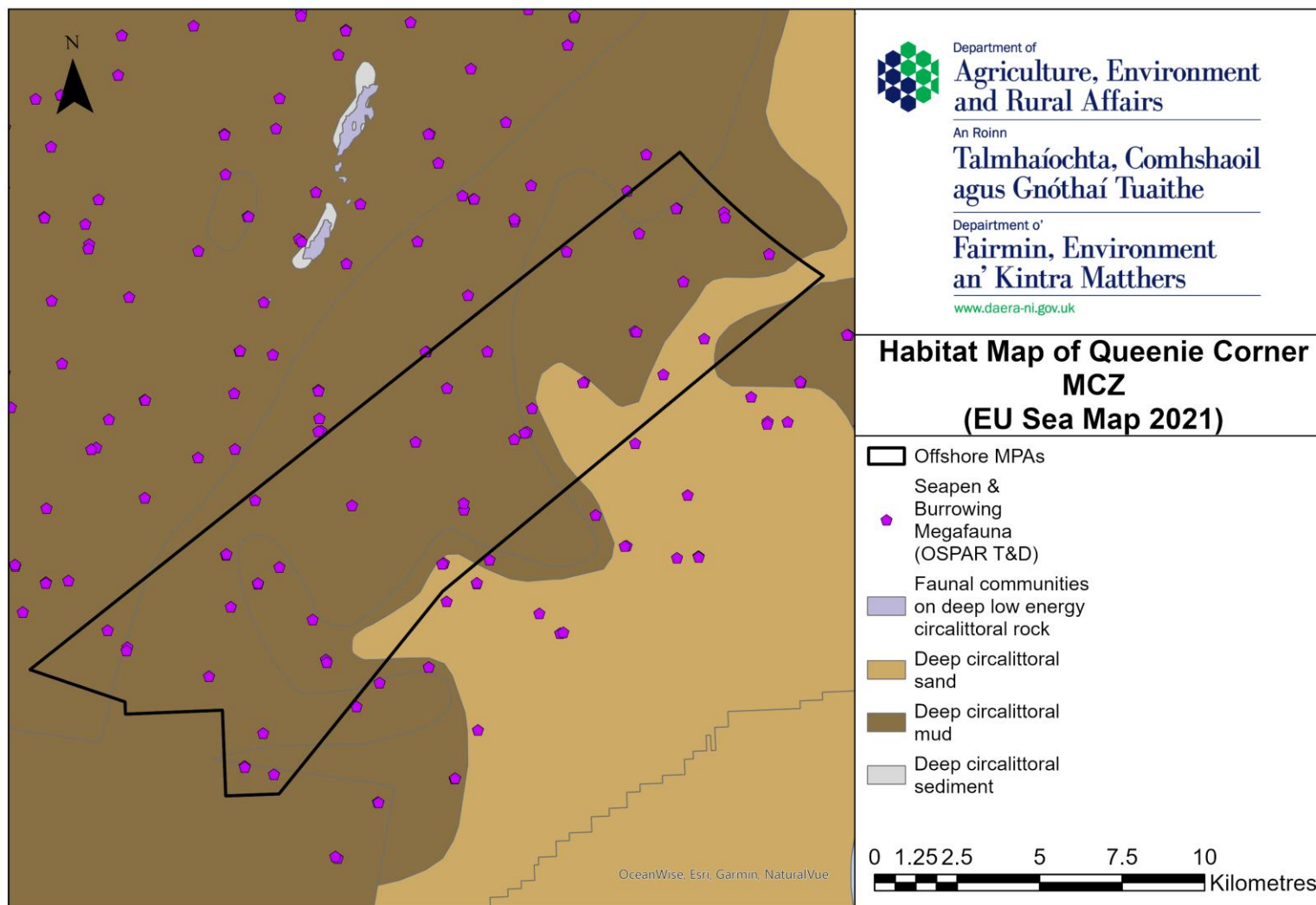


Figure A2: Queenie Corner MCZ Broadscale habitat map (EUNIS level 3).

Annex B – Map of Fishing Activity at Marine Conservation Zones

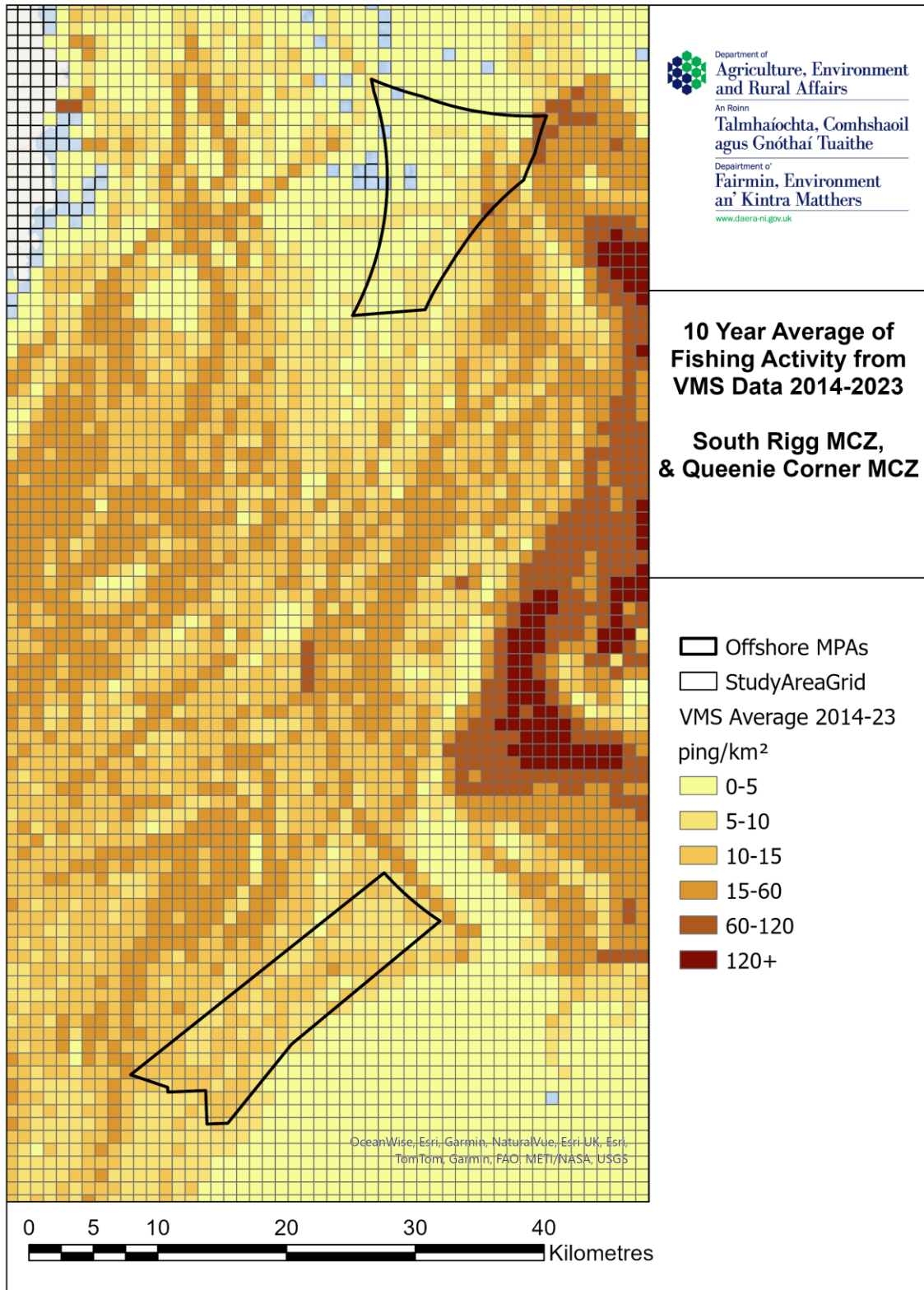


Figure B1: Fishing Activity from VMS data at South Rigg MCZ and Queenie Corner MCZ average between 2014-2023.

Annex C – Assessment of the level of risk from demersal mobile gear and static gear fishing in Marine Conservation Zones

Table C1: Level of risk associated with demersal mobile gear and action advised for each feature within South Rigg MCZ (based on MarESA).

MPA	Feature	Biological Pressures	Chemical Pressures	Physical Pressures	Action advised
		Level of risk	Level of risk	Level of risk	
South Rigg MCZ	Moderate energy circalittoral rock	Moderate	Moderate	Moderate	Consider changes in management.
	Subtidal coarse sediment	High	High	High	Remove pressure from demersal mobile gear.
	Subtidal sand	High	High	High	Remove pressure from demersal mobile gear.
	Subtidal mud	Moderate	High	High	Remove pressure from demersal mobile gear.
	Subtidal mixed sediment	Moderate	Low	Moderate	Consider changes in management.
	Sea-pen and burrowing megafauna communities	High	High	High	Remove pressure from demersal mobile gear.

Table C2: Level of risk associated with demersal mobile gear and action advised for each feature within Queenie Corner MCZ (based on MarESA).

MPA	Feature	Biological Pressures	Chemical Pressures	Physical Pressures	Action advised
		Level of risk	Level of risk	Level of risk	
Queenie Corner MCZ	Subtidal mud	Moderate	High	High	Remove pressure from demersal mobile gear.
	Sea-pen & burrowing megafauna communities	Moderate	High	High	Remove pressure from demersal mobile gear.

For further information:

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Department of Agriculture, Environment and Rural Affairs
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