Conservation Objectives & Management Advice

WEST OF SCOTLAND DEEP-SEA MARINE RESERVE

MARCH 2020

Purpose of this document

This advice provides JNCC's assessment of the conservation objectives for the protected features of the West of Scotland deep-sea marine reserve and on the management measures considered necessary to conserve or recover the protected features accordingly. Moving forward, it is intended to support discussions with stakeholders around the implementation of management measures.

The advice does not attempt to cover all possible future activities that could be carried out within the deep-sea marine reserve. However, it does consider a range of activities and developments considered to be taking place within the deep-sea marine reserve at the point of writing and focuses on whether JNCC consider there could be a risk to the protected features not achieving their conservation objectives. On this basis, the information JNCC provides as part of this current advice document is necessarily generic and therefore indicative.

The following documents provide further information about the West of Scotland deep-sea marine reserve and should be read in conjunction with this advice:

Data Confidence Assessment – Provides an overview of JNCC's confidence in the data underpinning the presence and extent for the protected features of the deep-sea marine reserve.

Ecological Overview Document – Provides an overview of our ecological understanding of the deep-sea marine reserve; both in terms of the protected features and the geographic area more broadly with regards to its functional significance and associated ecosystem services.

CONSERVATION OBJECTIVES AND MANAGEMENT ADVICE FOR THE WEST OF SCOTLAND DEEP-SEA MARINE RESERVE

1. Introduction

This document presents JNCC's conservation objectives and advice on management for the West of Scotland deep-sea marine reserve. This advice should be referred to if you are:

- intending to carry out any licensed activity in or near the deep-sea marine reserve and need to find out how to operate within the law;
- an authority providing advice on specific proposals;
- intending to carry out a scientific survey;

and/or

- an authority responsible for putting management measures in place.

This advice has been developed to take into account existing activities and management measures already in place within the deep-sea marine reserve. In so doing, it considers management requirements over and above measures which are already in place.

2. Conservation objectives

The deep-sea marine reserve is intended to safeguard the conservation of a range of Scotland's deep-sea marine habitats, wildlife, geology and undersea landforms i.e. the protected features of the site. Please see Figures 1a, 1b, 1c and 1d for an overview of the distribution of the Vulnerable Marine Ecosystems (VMEs), sedimentary habitats, fish species and key geodiversity/large scale features of the site respectively.

Conservation objectives set out the desired ecological quality of the protected features. The overall ambition for the protected features of the deep-sea marine reserve is that:

- so far as they are already at favourable condition, they remain in such condition; and
- so far as they are not already in favourable condition, they be brought into such condition, and remain in such condition.

With respect to **burrowed mud, coral gardens, cold-water coral reefs, deep-sea sponge aggregations, offshore deep-sea muds, offshore subtidal sands and gravels** and **seamount communities** within the deep-sea marine reserve, this means that:

Their extent is stable or increasing; and
Their structures and functions, quality, and the composition of their characteristic biological communities (which includes a reference to the diversity and abundance of marine fauna forming part of or inhabiting that habitat) are such as to ensure that they are in a condition which is healthy and not deteriorating.

Any temporary deterioration in condition is to be disregarded if the habitats are sufficiently healthy and resilient to enable their recovery from such deterioration.

With respect to **Blue ling, Leafscale Gulper shark, Gulper shark, Orange roughy, Portuguese dogfish** and **Round-nose grenadier** within the deep-sea marine reserve, this means that:

The quality and quantity of their habitat; and
The composition of their population is such to ensure that the population is maintained in numbers which enable them to thrive.

Any temporary reduction of numbers is to be disregarded if the population of **Blue ling, Leafscale Gulper shark, Gulper shark, Orange roughy, Portuguese dogfish** and **Round-nose grenadier** is thriving and sufficiently resilient to enable its recovery from such reduction.

With respect to the geological and geomorphological features characterising the protected Key Geodiversity Areas within the deep-sea marine reserve**; bioherm reefs, continental slope turbidite canyons, erosional scour fields, iceberg ploughmarks, ice-distal and glacimarine facies, ice-proximal and ice-contact facies (e.g. mega-scale glacial lineations), large bank (Palaeogene igneous centre), parasitic cones, prograding wedge, scour moat, seamount, sediment drifts, sediment wave field, slide deposit, slide scars, small scale ridges, sub-glaci tills, turbidite accumulations** and the large-scale feature **seamounts** this means that:

Their extent, component elements and integrity are maintained;
Their structure and functioning are unimpaired; and
Their surface remains sufficiently unobscured for the purposes of determining whether the aforementioned points are satisfied.

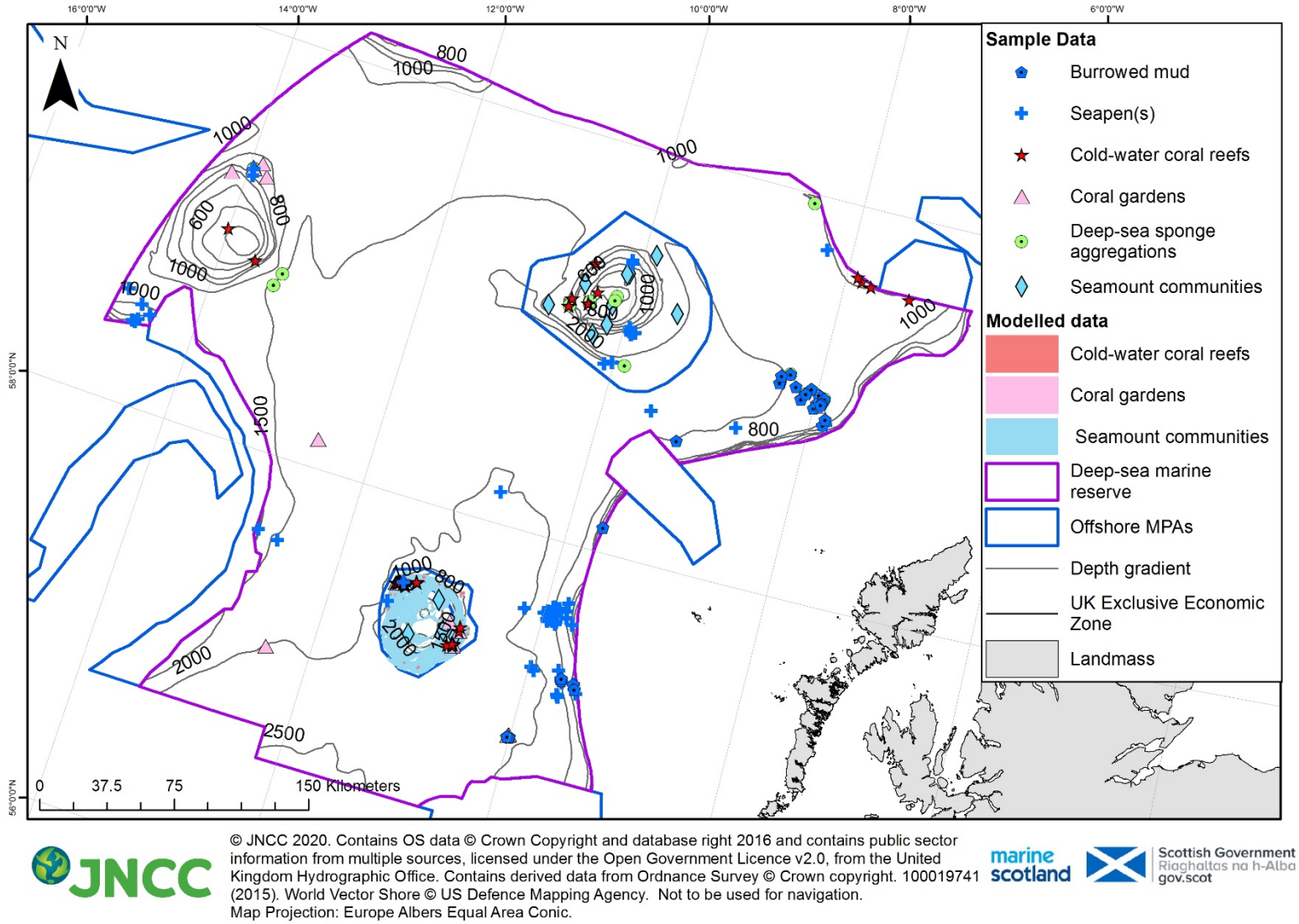

Figure 1a. The West of Scotland deep-sea marine reserve and the distribution of protected Vulnerable Marine Ecosystem (VME) features.

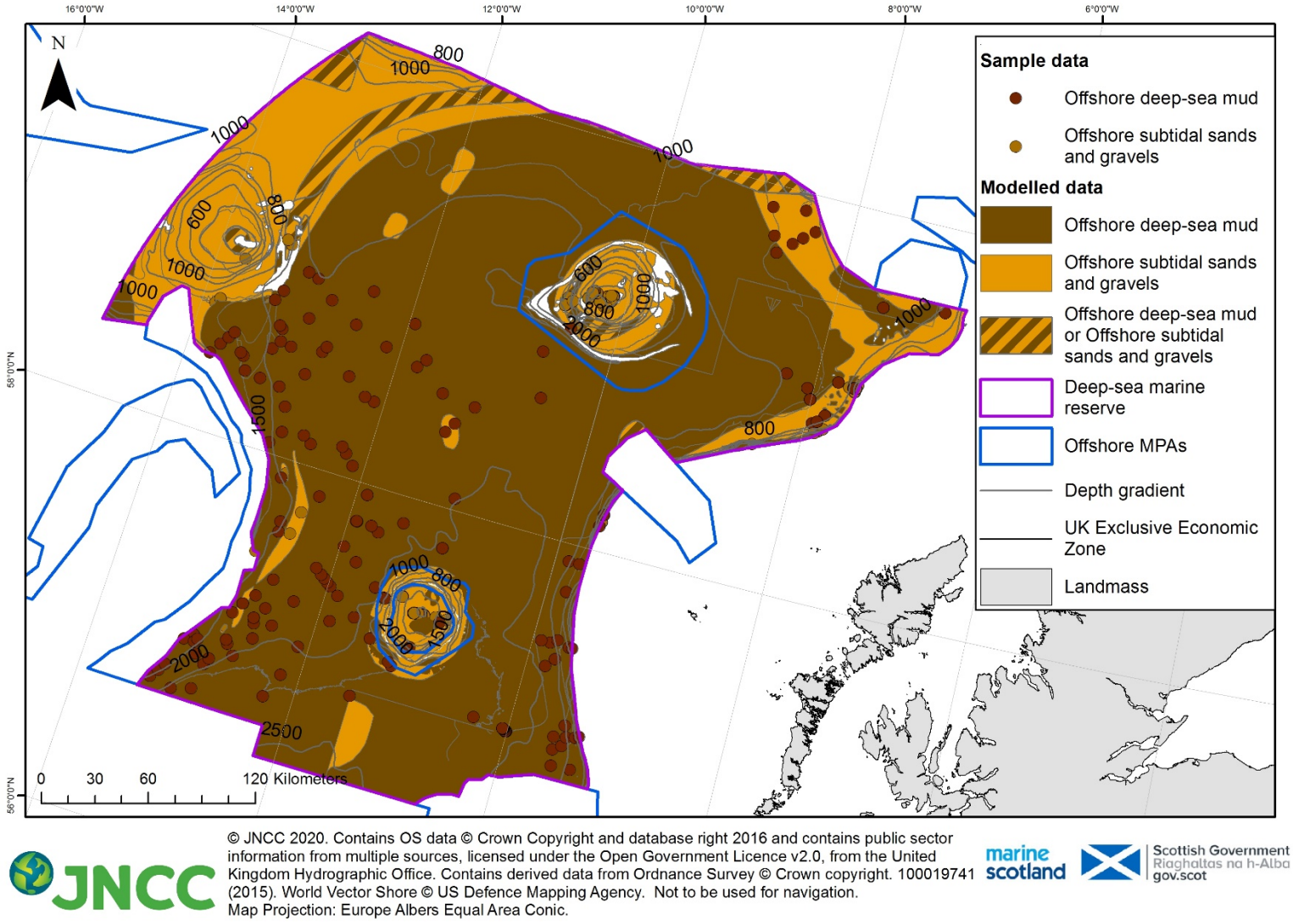

Figure 1b. The West of Scotland deep-sea marine reserve and the distribution of protected sedimentary habitat features.

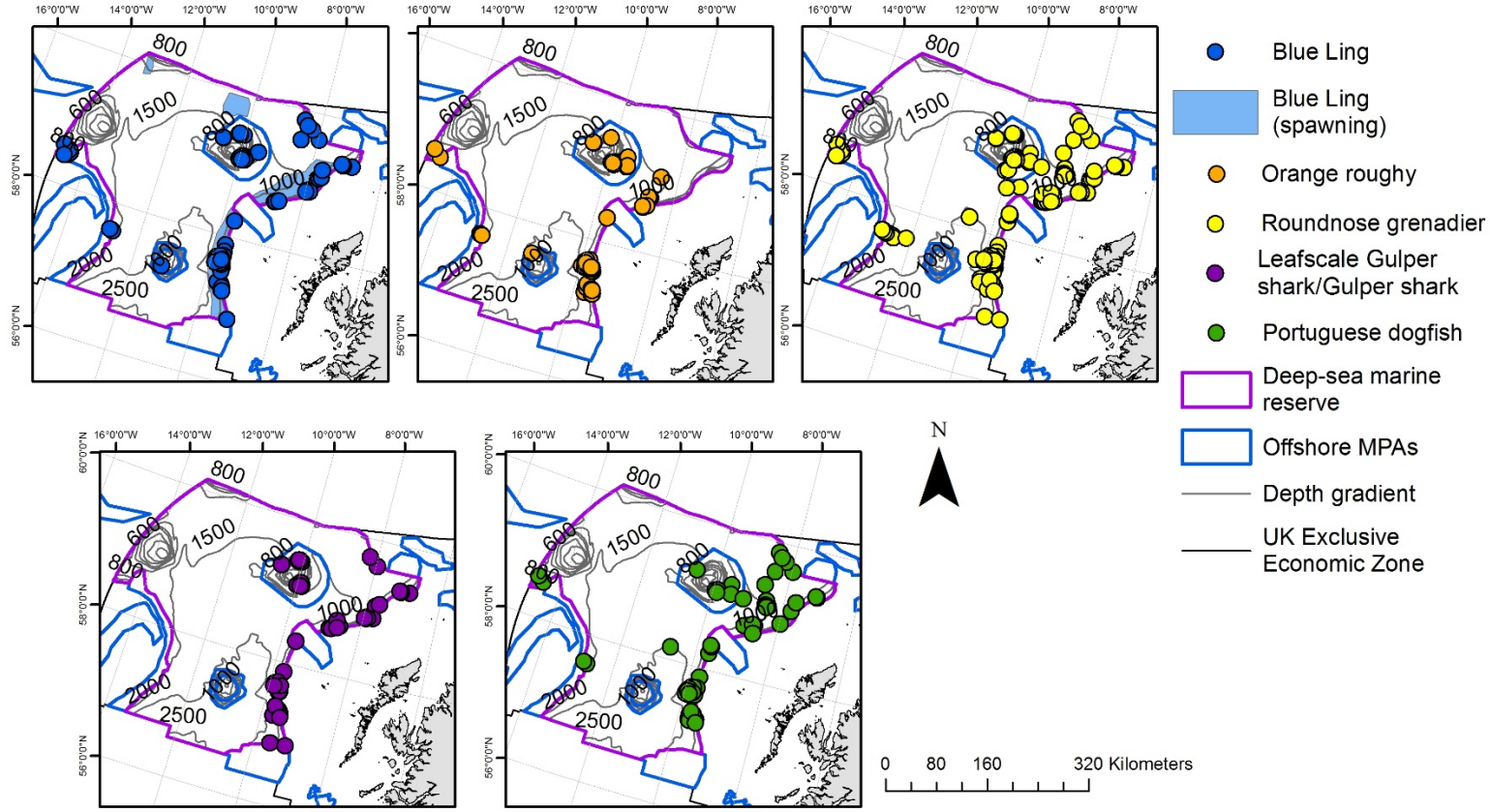

Figure 1c. The West of Scotland deep-sea marine reserve and the distribution of protected deep-sea fish species.

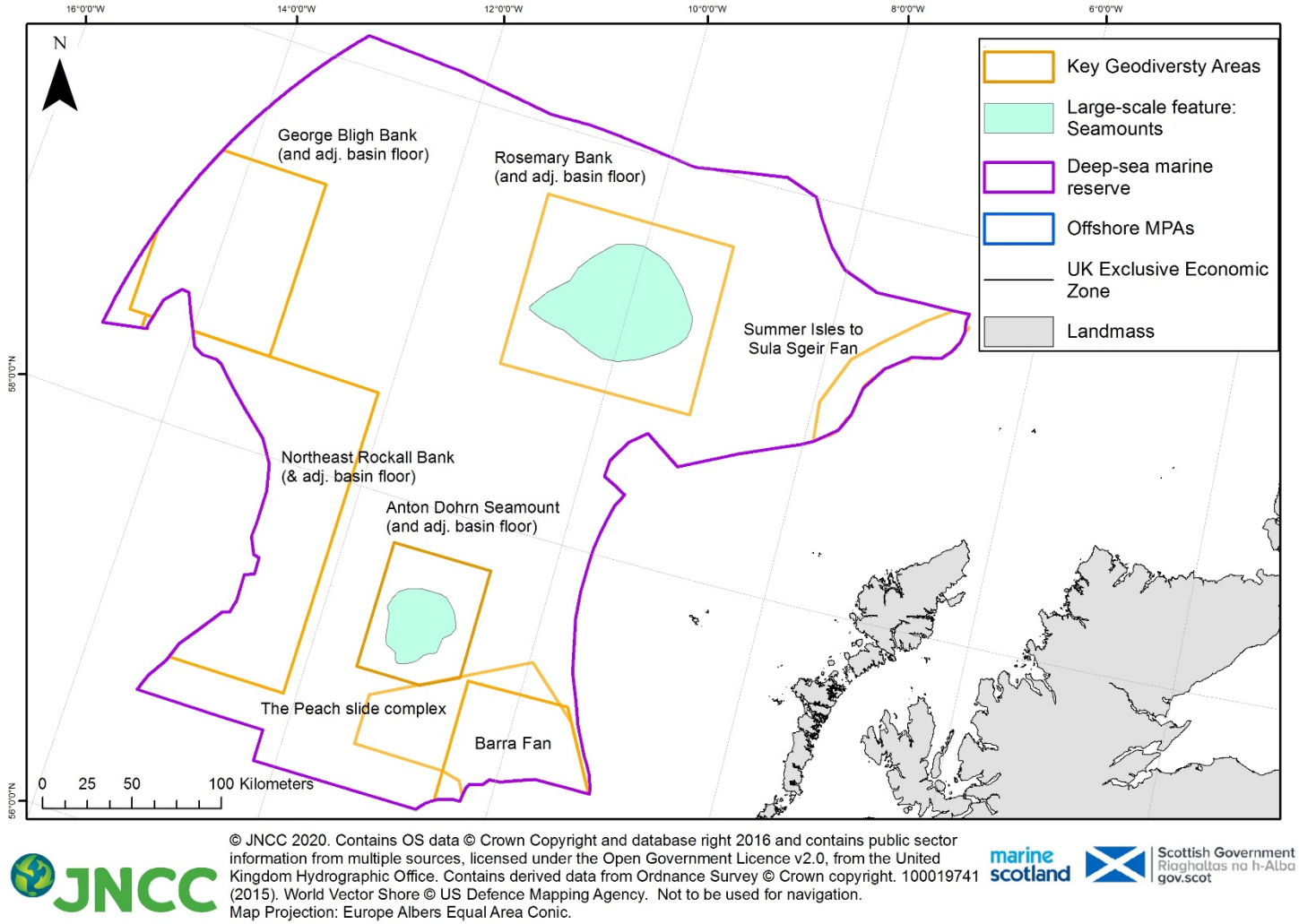

Figure 1d. The West of Scotland deep-sea marine reserve and the distribution of protected Key Geodiversity Areas, and large-scale features (seamounts).

3. Advising on conservation objectives

To advise on the management requirements for the deep-sea marine reserve, it is critical to understand whether the protected features are currently achieving favourable condition. A feature which is failing to achieve favourable condition needs to be managed in a way that allows it to recover to favourable condition. In such instances a 'recover' objective is advised. A feature which is achieving favourable condition needs to be managed in a way as to conserve it in favourable condition. In such instances a 'conserve' objective is advised. It is important to note that a conserve objective does not preclude the need for additional management; now or in the future.

Direct sources of evidence are available from which to infer condition of the protected deep-sea fish species of this site (based on information available from the International Council for the Exploration of the Seas (ICES) and the Oslo-Paris Convention (OSPAR). However, no such direct sources of evidence exist for the other protected features of the site. As such, a proxy assessment has been undertaken based on the exposure of the protected features to pressures associated with activities taking place to which they are considered to be sensitive. A pressure is the mechanism through which an activity has an effect on any part of the protected features. The nature of the pressure is determined by activity type, intensity and distribution. Different activities may cause the same pressure, e.g. fishing using bottom-contacting gears and oil and gas extraction both cause surface abrasion that can damage the seabed, although the scale and intensity of the pressure can vary between activities. The same activity can cause a range of different pressures. Protected features are considered sensitive to activities that could adversely affect their condition, especially if they are unable or are very slow to recover from damage as in the case of Vulnerable Marine Ecosystems. With increasing vulnerability i.e. exposure to and sensitivity to pressures, the less likely a protected feature is to be in favourable condition.

Unless otherwise stated, JNCC have drawn from sensitivity information contained in Marine Scotland's Feature Activity Sensitivity Tool (FeAST) and JNCC's Pressures Activities Database to undertake an assessment of the likely condition of each protected feature of the site where direct information on feature condition is not available (Table 1). In cases where a proxy assessment has been undertaken, levels of certainty are set as 'uncertain' by virtue of the fact that likely condition is inferred from the levels of exposure to human activities associated with pressures to which the protected features are considered to be sensitive. In each case, Table 1 provides a brief rationale underpinning JNCC's judgement as to whether the feature is likely to be in favourable condition (and therefore needs to be conserved) or unfavourable condition (and therefore needs to be recovered). Figures 2a-v provide an overview of JNCC's understanding of the activities taking place within the deep-sea marine reserve which was used as a basis for undertaking the exposure assessment that informed this advice. Recover objectives are advised for all the protected features of the deep-sea marine reserve with the exception of blue ling. This reflects our understanding that these features are highly sensitive to combined pressures associated with historical and ongoing activities, with prolonged recovery times expected and/or as a conclusion from direct sources of evidence.

The geological/geomorphological features representing the protected Key Geodiversity Areas of the site are not considered to be sensitive to the pressures associated with human activities taking place within the site (after Brooks, 2013[1]). With respect to the large-scale features, their

[1] available at: https://www.nature.scot/sites/default/files/2018-09/Publication%202013%20-%20SNH%20Commissioned%20Report%20590%20-%20%20Assessing%20the%20sensitivity%20of%20geodiversity%20features%20in%20Scotlands%20seas%20to%20pressures%20associated%20with%20human%20activities.pdf

biological components broadly comprise the protected habitat and VME features for the site, for which individual objectives are advised reflecting our understanding of their sensitivity to pressures from human activities as previously described. As such, JNCC considers there to be no significant risk to the geological/geomorphological or large-scale features not achieving their conservation objectives and a default conserve objective is advised accordingly.

Table 1. Protected feature conservation objectives, level of certainty and rationale underpinning the assessment.

Protected feature	Conservation objective	Level of certainty	Rationale
Burrowed mud	Recover to favourable condition	Uncertain	The Protected features are considered moderately or highly vulnerable to pressures associated with demersal fishing activity.
Cold-water coral reefs	Recover to favourable condition	Uncertain	
Coral gardens	Recover to favourable condition	Uncertain	
Deep-sea sponge aggregations	Recover to favourable condition	Uncertain	
Seamount communities	Recover to favourable condition	Uncertain	
Offshore deep-sea muds	Recover to favourable condition	Uncertain	The Protected features are considered moderately or highly vulnerable to pressures associated with demersal fishing activity and the laying and maintenance of telecommunications cables.
Offshore subtidal sands and gravels	Recover to favourable condition	Uncertain	
Blue Ling (*Molva dypterygia*)	Conserve at favourable condition	Certain	The deep-sea marine reserve includes several conservation measures designed to protect blue ling during the spawning season[2] and ICES advice suggests positive trends in stock and exploitation status across the region[3]
Leafscale gulper shark (*Centrophorus squamosus*) / Gulper shark (*Centrophorus granulosus*)	Recover to favourable condition	Certain	ICES advice suggests a strong declining trend across the region[4] and OSPAR have identified the species to be under threat/subject to decline across the North-east Atlantic[5],[6].
Orange roughy (*Hoplostethus atlanticus*)	Recover to favourable condition	Certain	ICES advice suggests a strong declining trend across the region[7] and OSPAR have identified the species to be under threat/subject to decline across the North-east Atlantic[8].

[2] Available at: https://academic.oup.com/icesjms/article/67/3/494/733188
[3] Available at: http://ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/bli-5b67.pdf
[4] Available at: http://ices.dk/sites/pub/Publication%20Reports/Advice/2018/Special_requests/eu.2018.11.pdf
[5] Available at: https://www.ospar.org/documents?d=7215
[6] Available at: https://www.ospar.org/documents?d=7214
[7] Available at: http://ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/ory-comb.pdf
[8] Available at: https://www.ospar.org/documents?d=7257

Portuguese dogfish (*Centroscymnus coelolepis*)	Recover to favourable condition	Certain	ICES advice suggests a strong declining trend across the region[9] and OSPAR have identified the species to be under threat/subject to decline across the North-east Atlantic[10].
Round-nose grenadier (*Coryphaenoides rupestris*)	Recover to favourable condition	Certain	ICES advice suggests a strong declining trend across the region[11].

[9] Available at: http://ices.dk/sites/pub/Publication%20Reports/Advice/2018/Special_requests/eu.2018.11.pdf
[10] Available at: https://www.ospar.org/documents?d=7211
[11] Available at: http://ices.dk/sites/pub/Publication%20Reports/Advice/2018/Special_requests/eu.2018.11.pdf

4. Management advice

Management advice for this site sets out where JNCC consider that additional management of activities may be required to achieve the conservation objectives for the protected features of the deep-sea marine reserve. Management advice is provided in the context of human activities known to be taking place and management already in place within the site.

4.1 Overview of activities taking place

Telecommunications cables
Three telecommunications cables run through the west and north of the site (Figures 2a and 2b), which may have localised impacts on the protected features: offshore deep-sea muds and offshore subtidal sands and gravels.

Oil and gas exploration
Oil and gas exploration is taking place within the deep-sea marine reserve; albeit at relatively low levels. Figures 2a and 2b show JNCC's understanding of the known distribution of:

- Oil and gas infrastructure (comprising eight wells clustered on the continental slope north-west of Lewis where activity is currently considered suspended although it is unclear if infrastructure has been removed and/or remains in place and continues to impact protected features);
- Licence awarded blocks for further potential development (in the west of the site and in the north and south of the continental slope within the site). It is understood no activity is currently occurring in this area and therefore not considered to be impacting any features.

Military activity
Military of Defence practice areas occur in the south-eastern part of the site (Figure 2c), south of the Geikie slide MPA. This overlaps with the protected features: burrowed mud (including sea-pens), cold-water coral reefs, coral gardens, seamount communities, offshore deep-sea muds, offshore subtidal sands and gravels and the deep-sea fish protected features. There is limited information on what this activity entails. It is therefore not possible to determine whether it is capable of impacting any of the protected features of the site.

Shipping
Shipping occurs within the site, but at low levels compared with other areas of UK and Scottish waters. Figure 2d shows an Automatic Identification System (AIS) grid of vessel densities from 2015 and anonymised vessel track lines from 2014. Shipping activity overlaps with the protected features: burrowed mud (including sea-pens), cold-water coral reefs, coral gardens, deep-sea sponge aggregations, seamount communities, offshore deep-sea muds, offshore subtidal sands and gravels and the deep-sea fish proposed features. The features are not considered to be sensitive to i.e. impacted by, pressures associated with shipping taking place within the site.

Noise activity
Noise activity can encompass pile driving, geophysical surveys (seismic, sub bottom profiling and multibeam echosounders), explosives and some acoustic deterrent devices. Seismic activity occurs throughout the site but occurs more frequently in the east of the deep-sea marine reserve along the continental shelf (Figure 2e). Seismic activity overlaps with the protected features: burrowed mud (including sea-pens), cold-water coral reefs, coral gardens, deep-sea sponge aggregations, seamount communities, offshore deep-sea muds, offshore subtidal sands and gravels and the deep-sea fish protected features. Based on evidence

currently available the protected features are not considered to be sensitive to i.e. impacted by, pressures associated with noise taking place within the site (FeAST, Carroll *et al.* 2017).

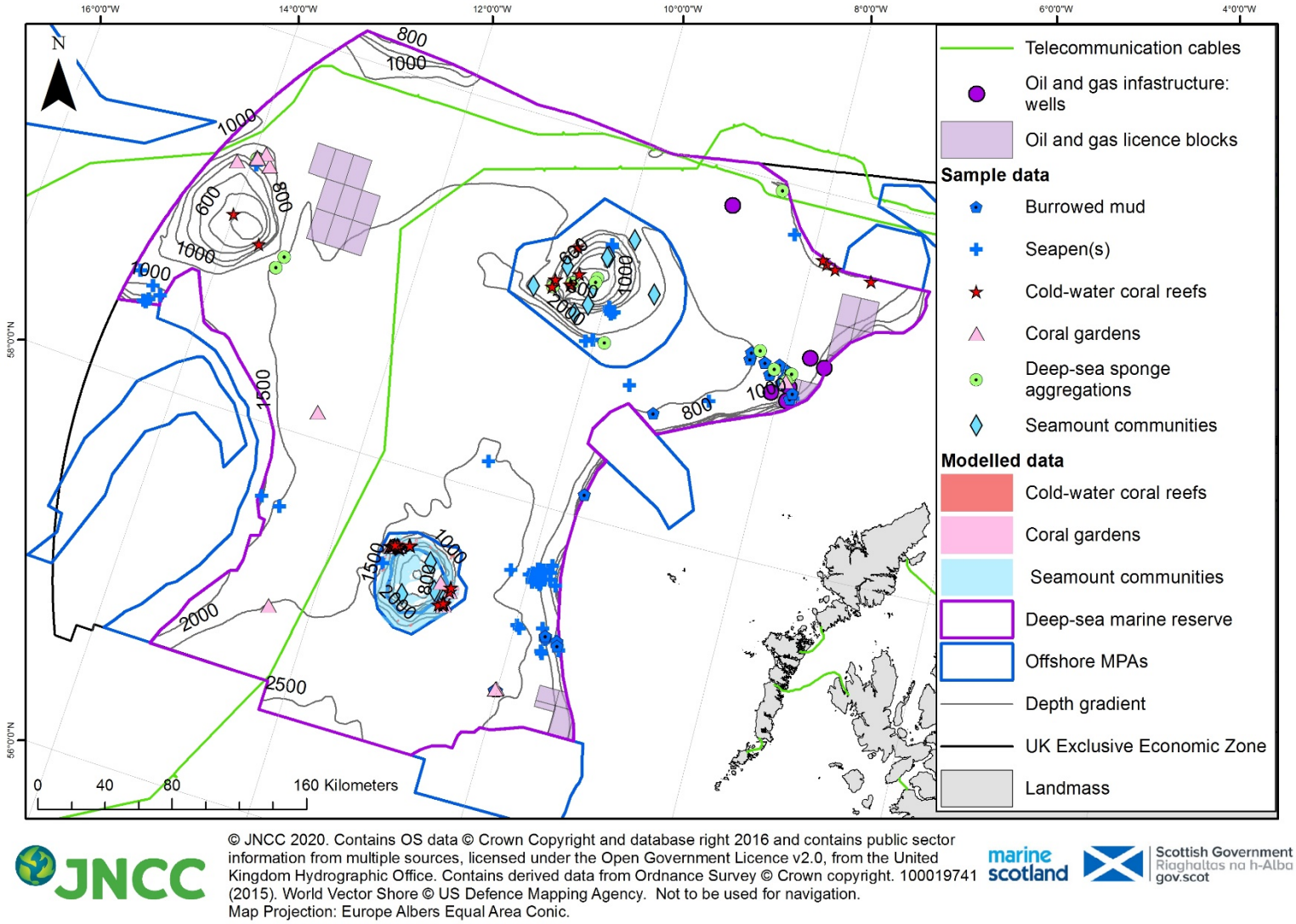

Figure 2a. Location of cables, and oil and gas infrastructure (wells) and licence blocks in relation to protected VME features.

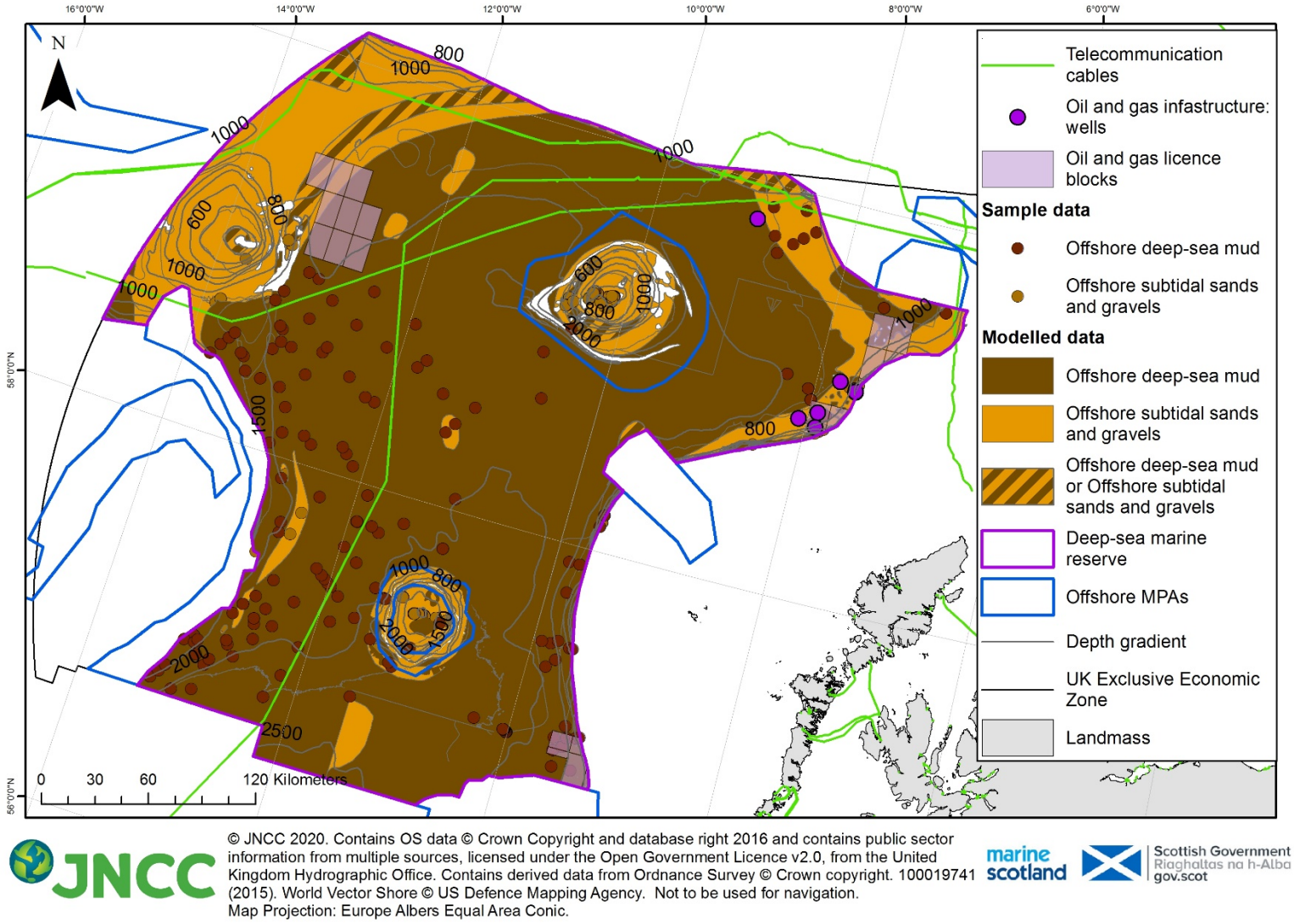

Figure 2b. Location of cables, and oil and gas infrastructure (wells) and licence blocks in relation to protected sedimentary features.

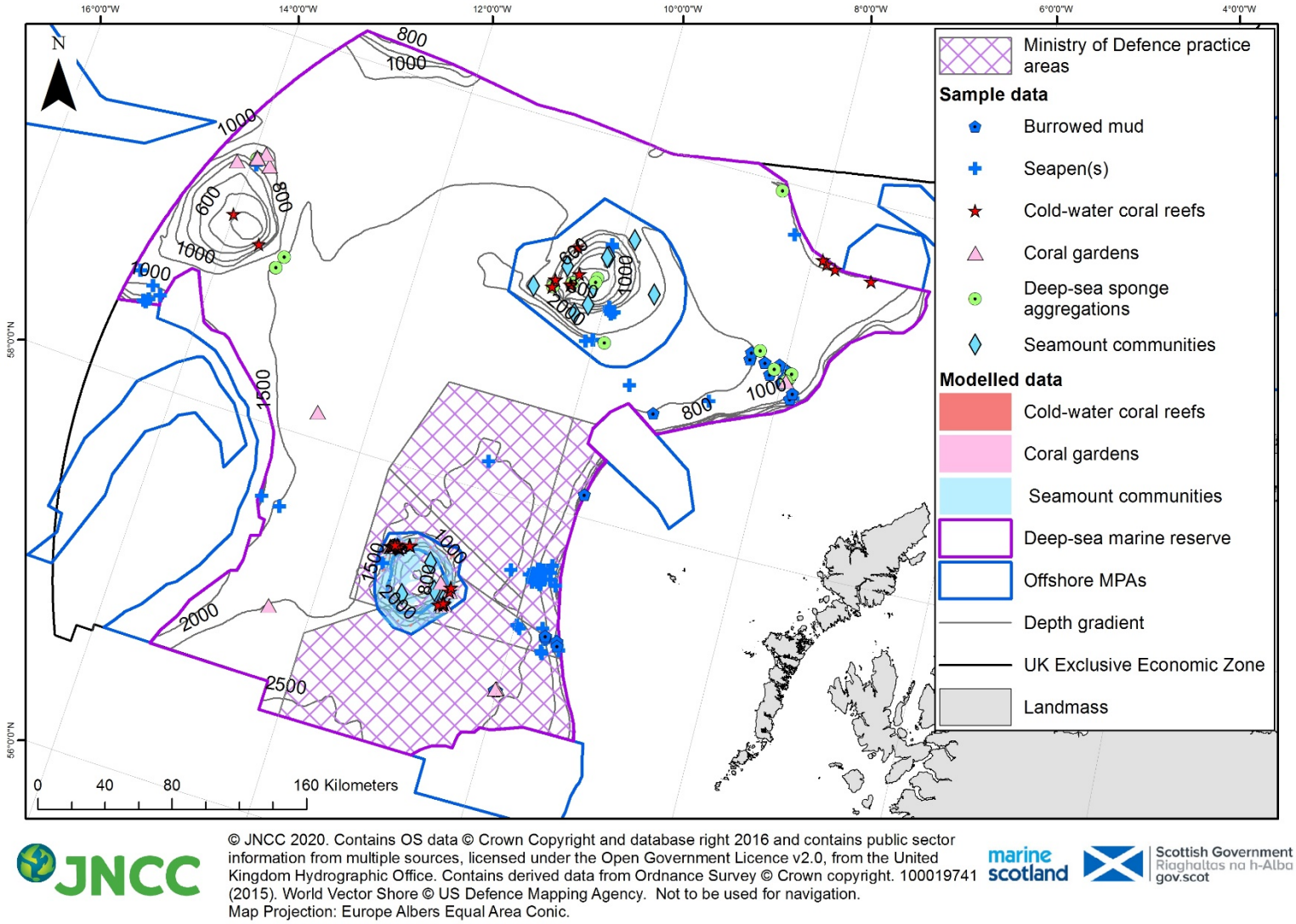

Figure 2c. Location of Military activity in relation to protected VME features.

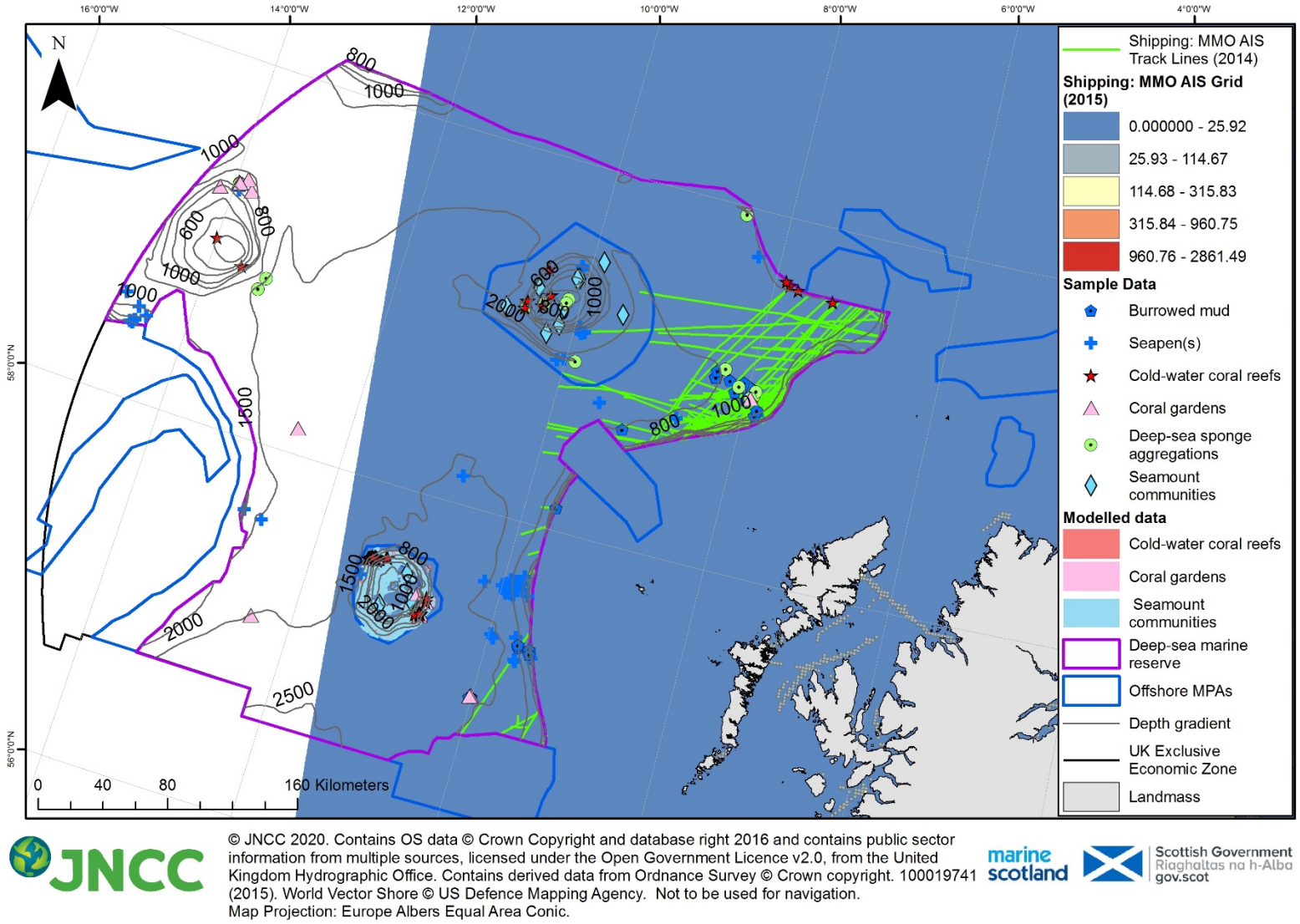

Figure 2d. Location of shipping activity in relation to protected VME features.

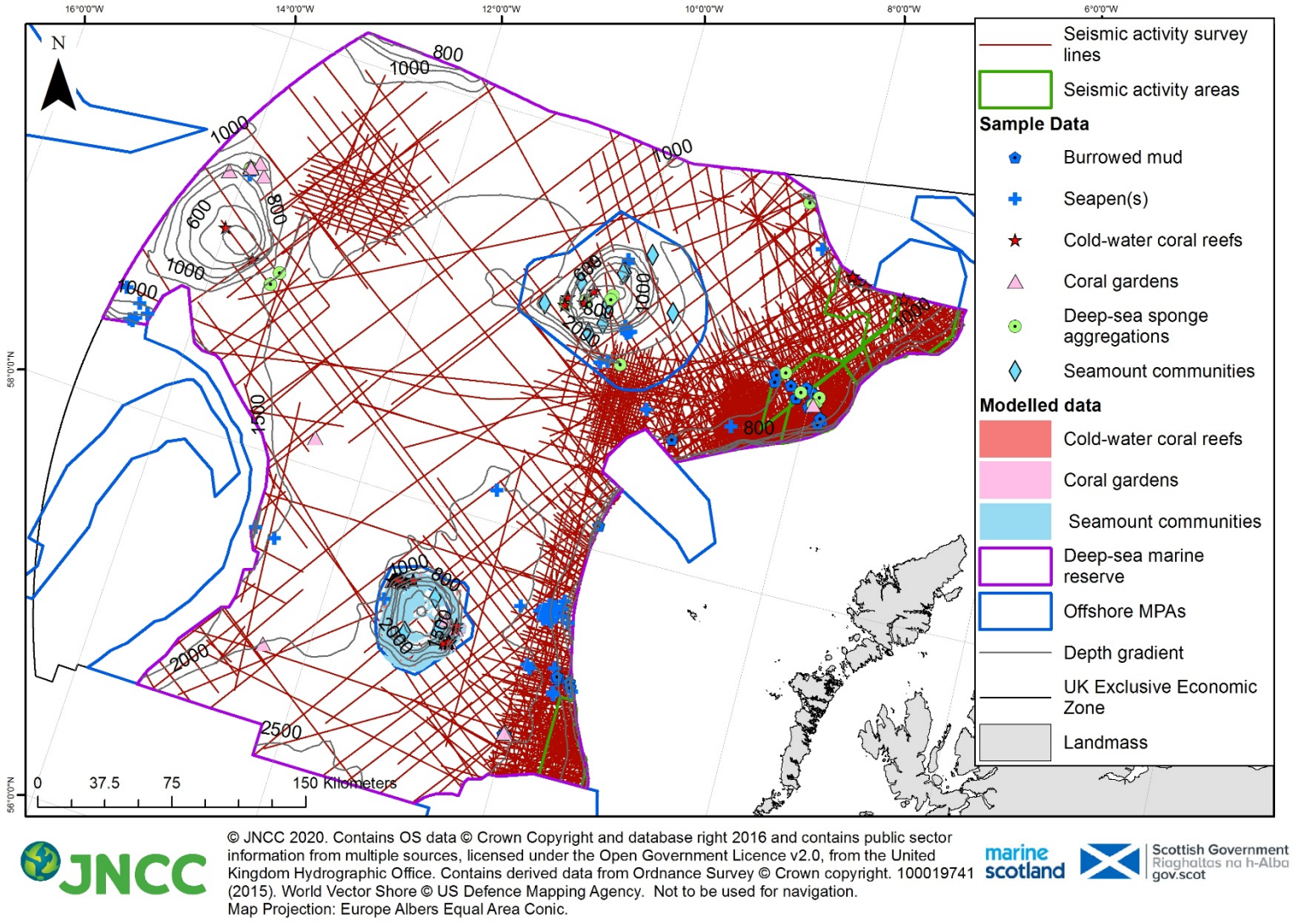

Figure 2e. Location of seismic activity in relation to protected VME features.

Fishing activity

Mobile
UK and non-UK mobile demersal fishing activity is reported to be taking place across the site, albeit at relatively low levels. Effort is concentrated along the continental slope, particularly in the north-east of the site and also on the topographic features of the seamounts and George Bligh Bank. Demersal trawling is also reported along the north boundary of the site and effort was scattered across the Rockall Basin in the southern half of the deep-sea marine reserve (Figures 2f-j).

Data are unavailable to support an overview of mobile demersal fishing activity beyond 2016 at the time of writing. This activity is reported as occurring throughout the site every year between 2009 and 2016. The deep-sea Regulation (EU) 2016/2336, which prohibits all bottom trawling activity below 800m, came into force at the end of 2016 and there should be no demersal trawling effort below 800m since that time. However, historic fishing activity is considered relevant in assessing the condition of the protected features of the site. Many of the protected features' communities are long-lived and slow growing, with recovery from impacts anticipated to take a relatively long time i.e. they are expected to still be impacted.

Static
According to available data, bottom contacting static fishing activity (gillnets, hooks and lines, pots) is concentrated over topographic features such as Anton Dohrn Seamount, Rosemary Bank Seamount and George Bligh Bank, but also occurs along the continental shelf and there is scattered activity (from gillnets and hooks and lines) over the Rockall basin part of the site (Figures 2k-v). Impacts can arise from hooks, lines, nets and ropes becoming entangled with corals and other fragile species, including 'plucking' them from the seabed during hauling (Mortensen *et al*., 2005; Muñoz *et al.,* 2010; OSPAR, 2010). Static gears (set nets, hook and lines, pots and traps) can produce localised physical seabed effects depending on how far they travel over the seabed during setting or retrieval (Gubbay, 2015).

Scientific research
The area of the deep-sea marine reserve has been subject to numerous scientific research cruises to collect further information about the marine environment. Sampling methods range from non-interactive to potentially damaging e.g. extractive and disturbing the seabed. There is insufficient information to be able to comment on the nature, location or frequency of scientific research in the deep-sea marine reserve.

Deep-sea mining
It is not thought that deep-sea mining is occurring in the deep-sea marine reserve and therefore impacting any of the protected features. However, there is the potential for the site to be of interest for deep-sea mining activities in the future; most notably for the mining of ferromanganese crusts that occur on the seamounts within the site. JNCC's view is that deep-sea mining would be capable of damaging the protected features of the site were it to occur.

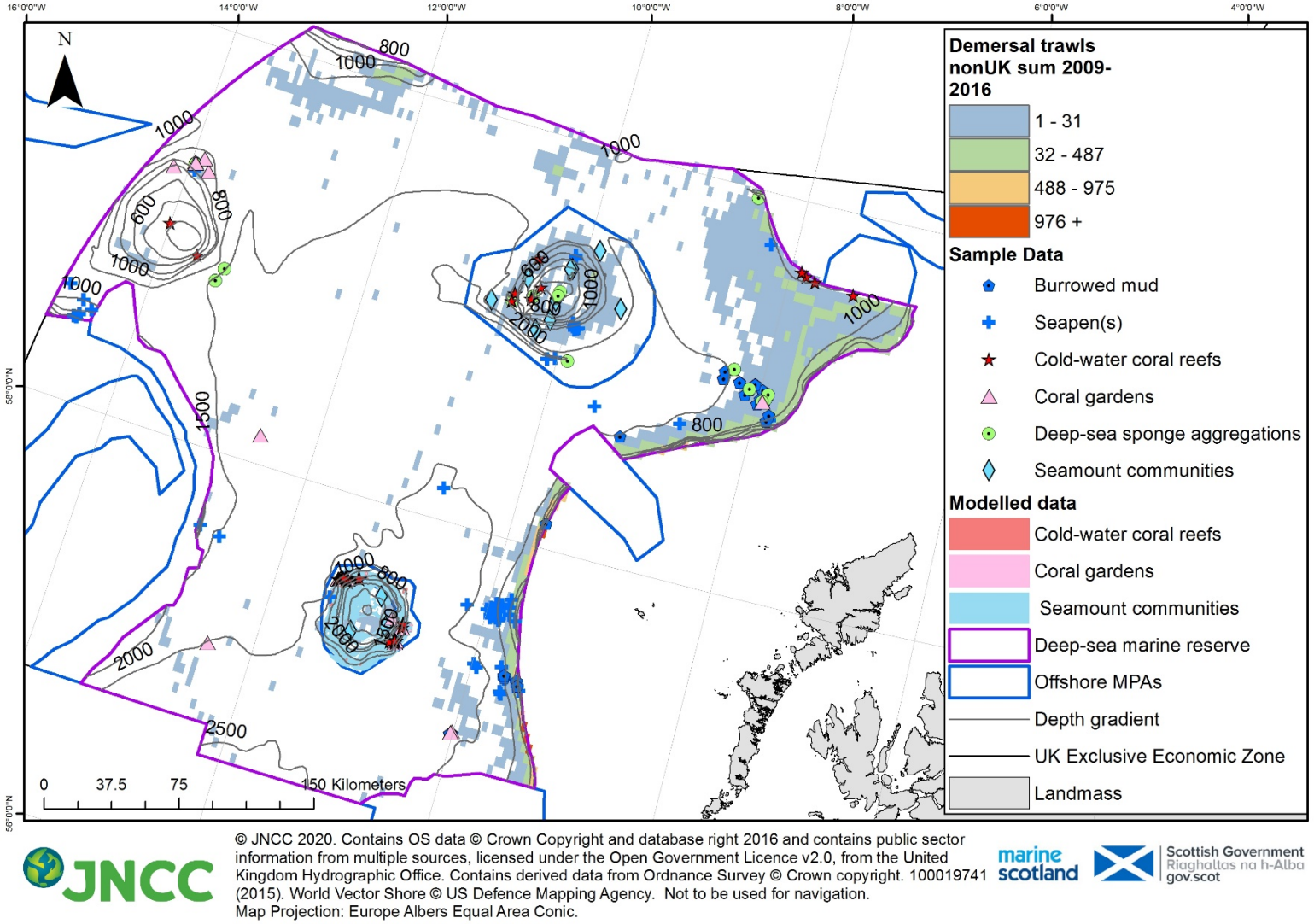

Figure 2f. Location of demersal trawls non-UK fishing activity (2009-2016) in relation to protected VME features.

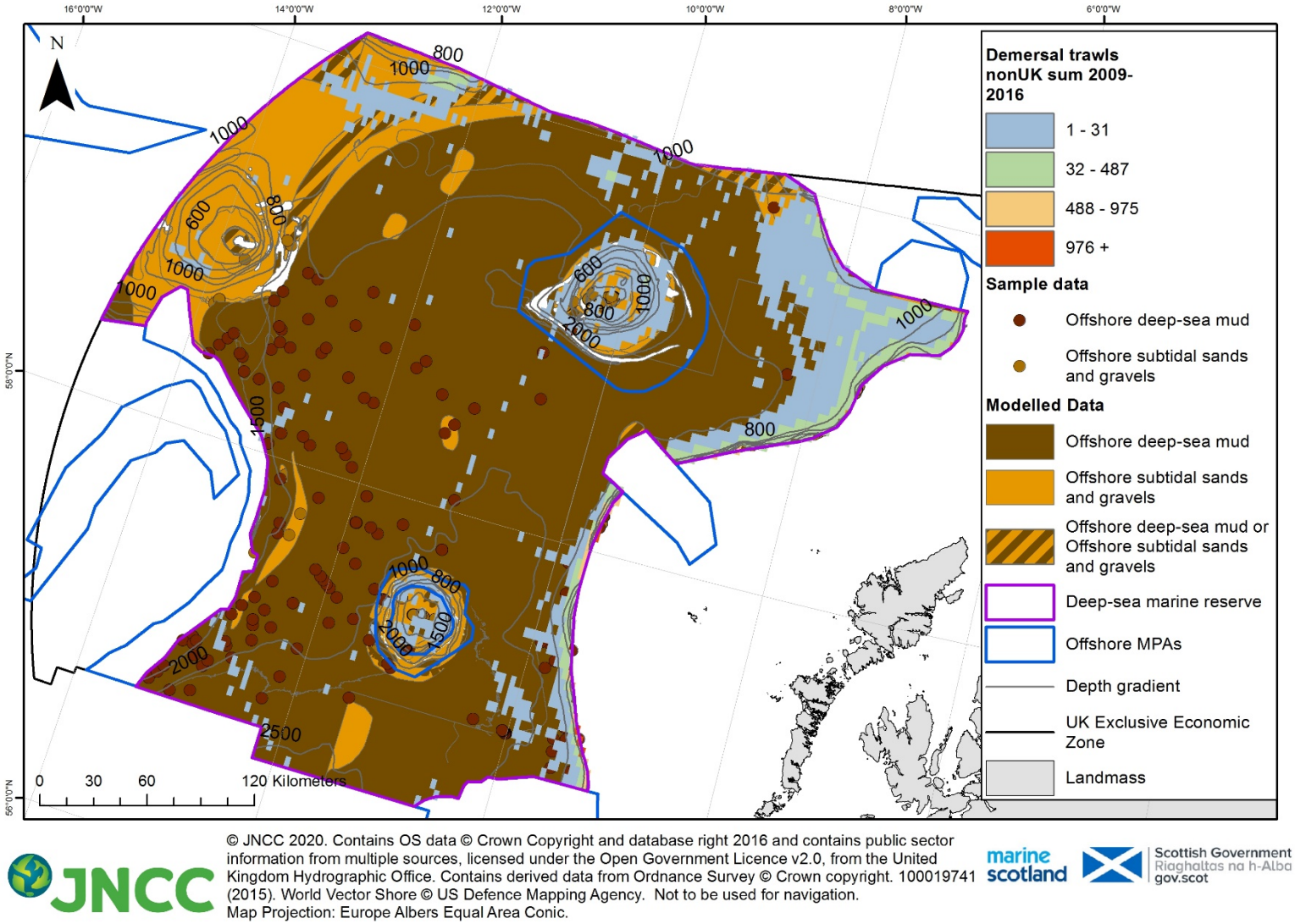

Figure 2g. Location of demersal trawls non-UK fishing activity (2009-2016) in relation to protected sedimentary features.

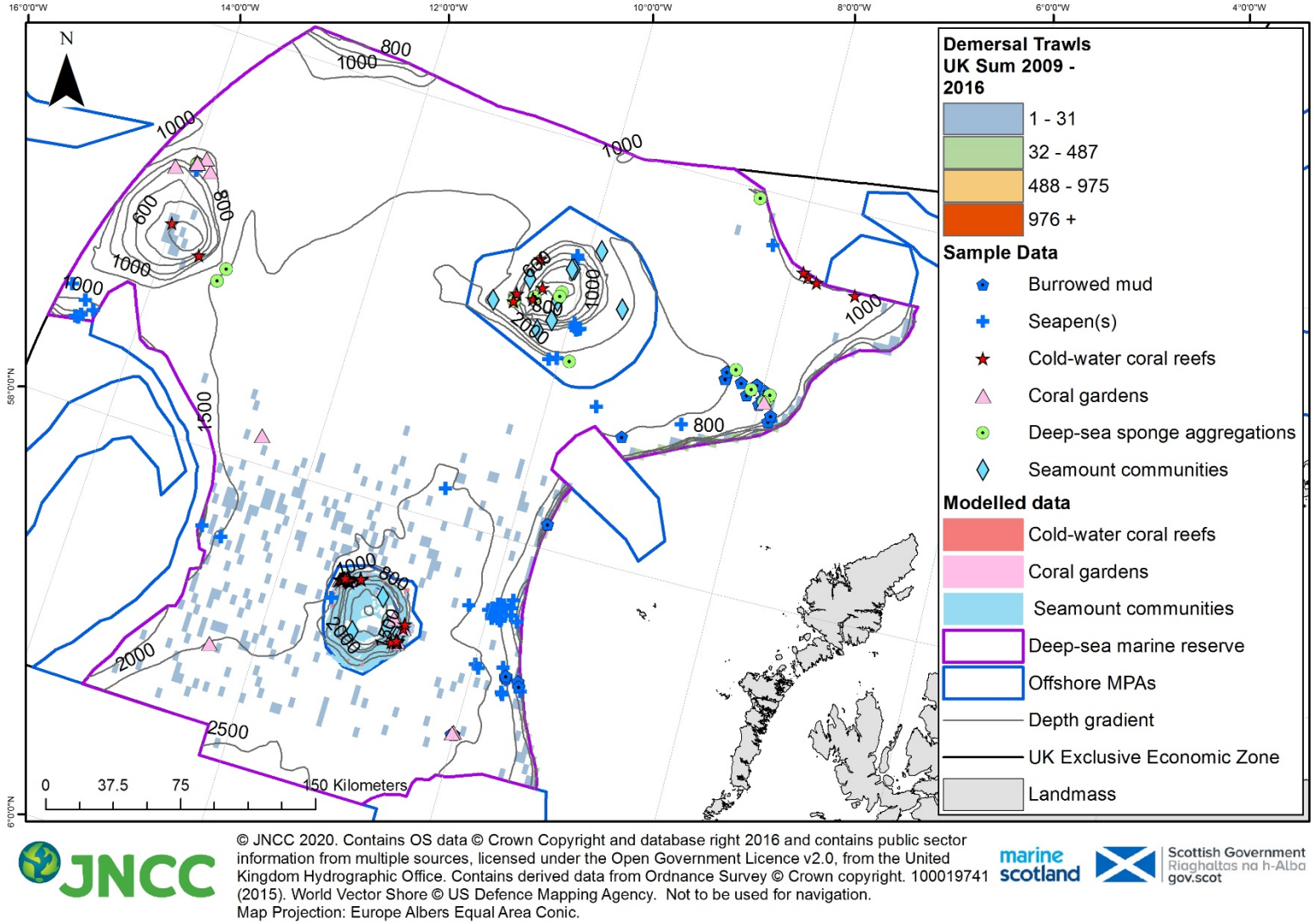

Figure 2h. Location of demersal trawls UK fishing activity (2009-2016) in relation to protected VME features.

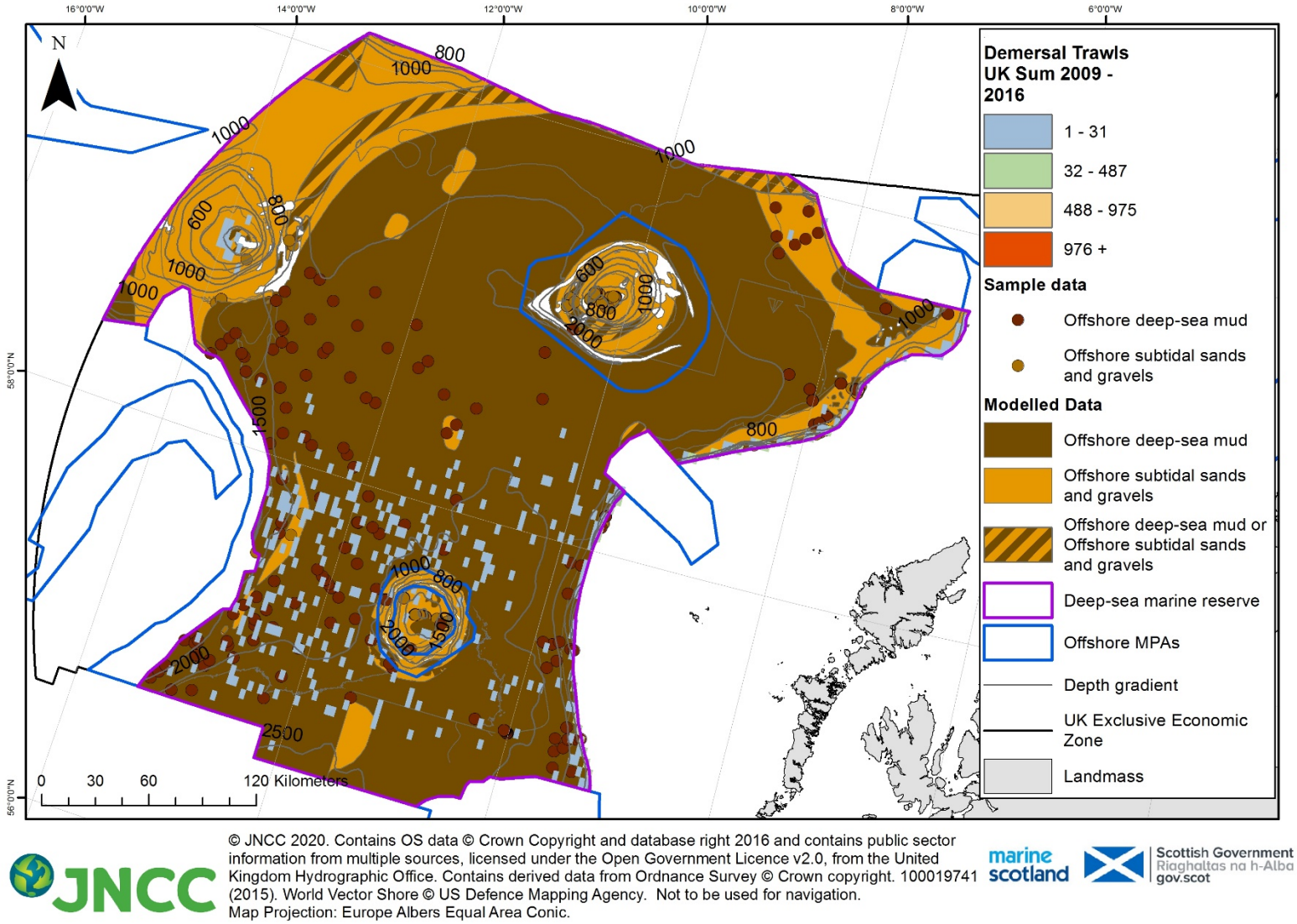

Figure 2i. Location of demersal trawls UK fishing activity (2009-2016) in relation to protected sedimentary features.

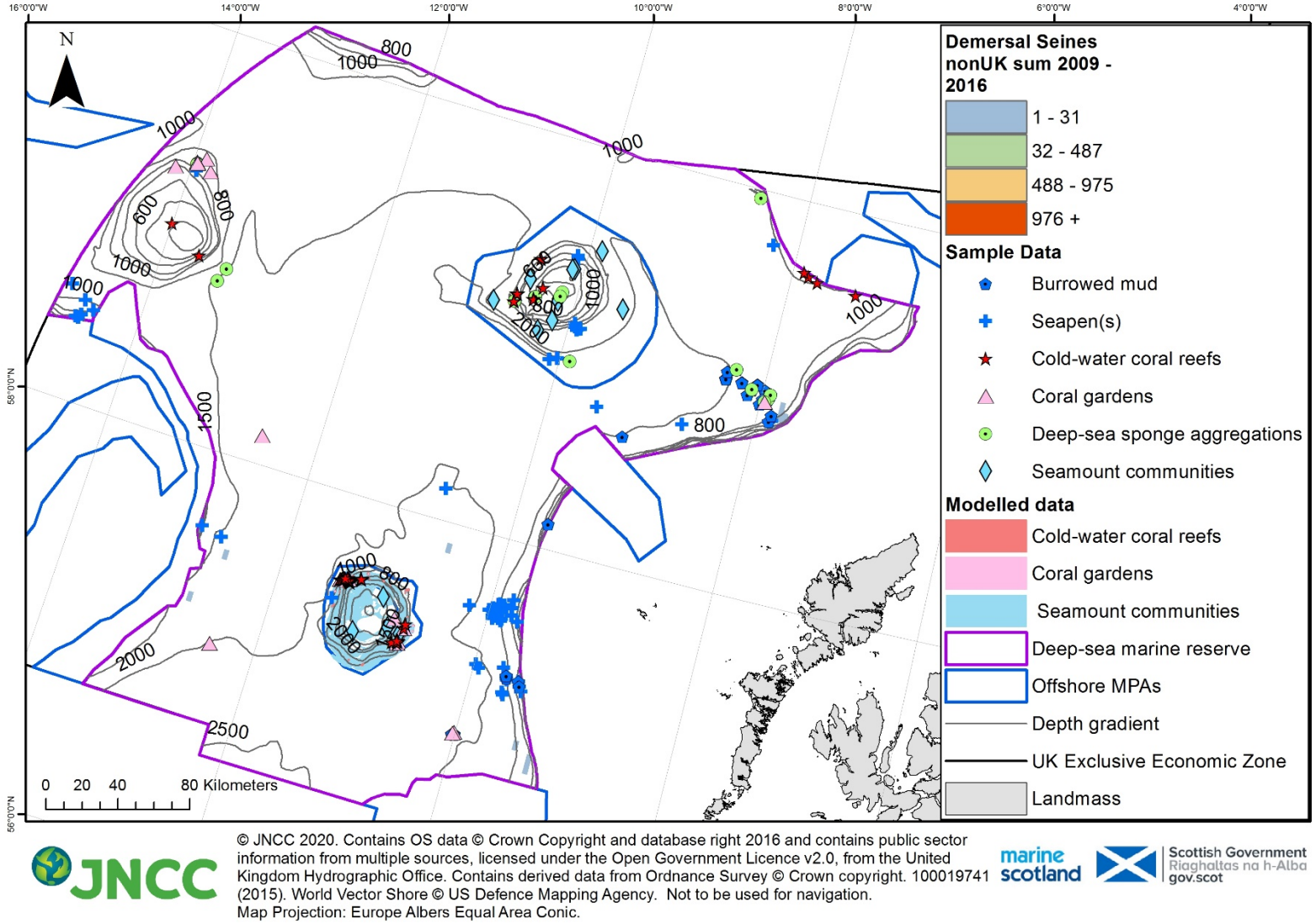

Figure 2j. Location of demersal seines non-UK fishing activity (2009-2016) in relation to protected VME features.

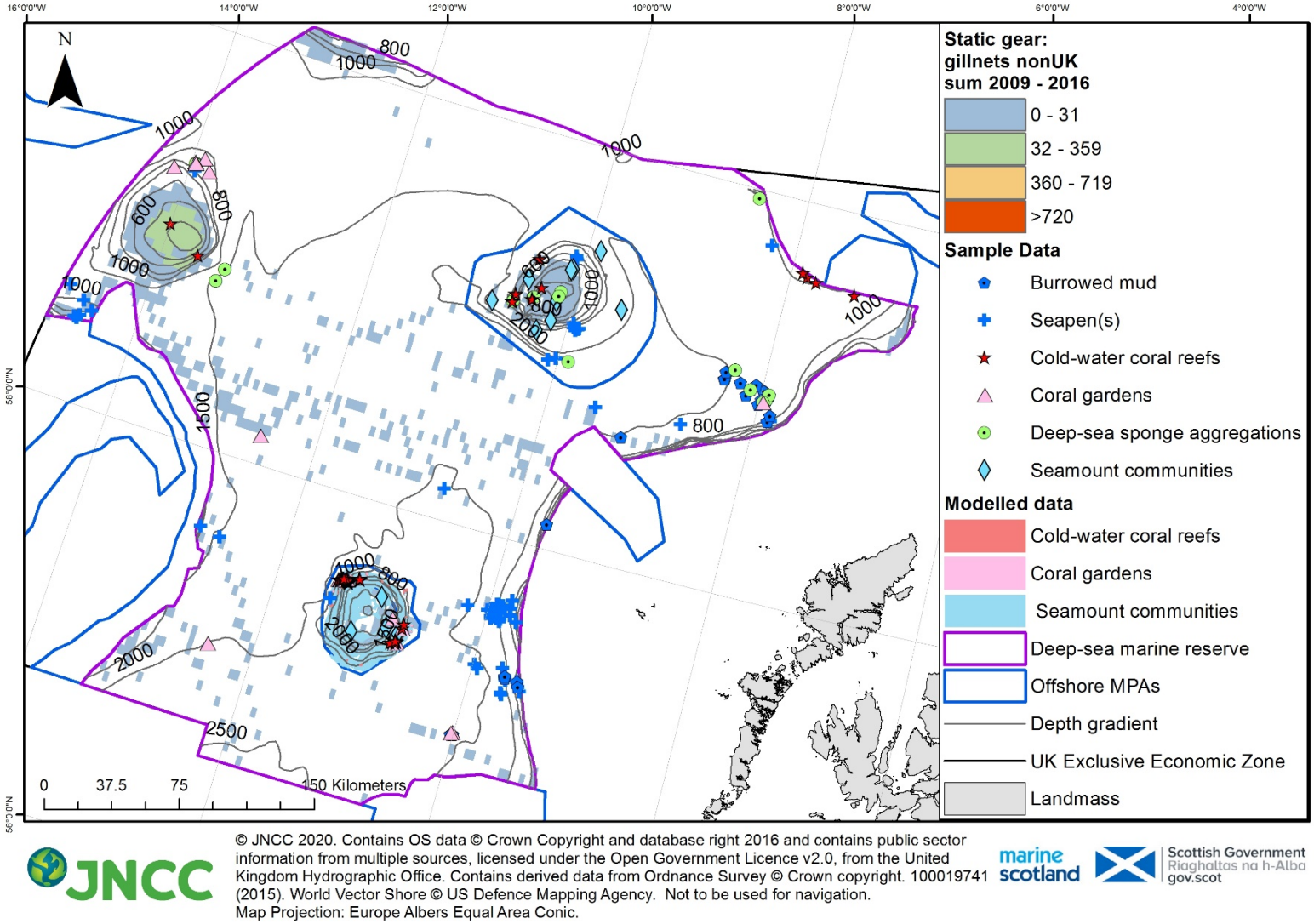

Figure 2k. Location of static gears gillnet non-UK fishing activity (2009-2016) in relation to protected VME features.

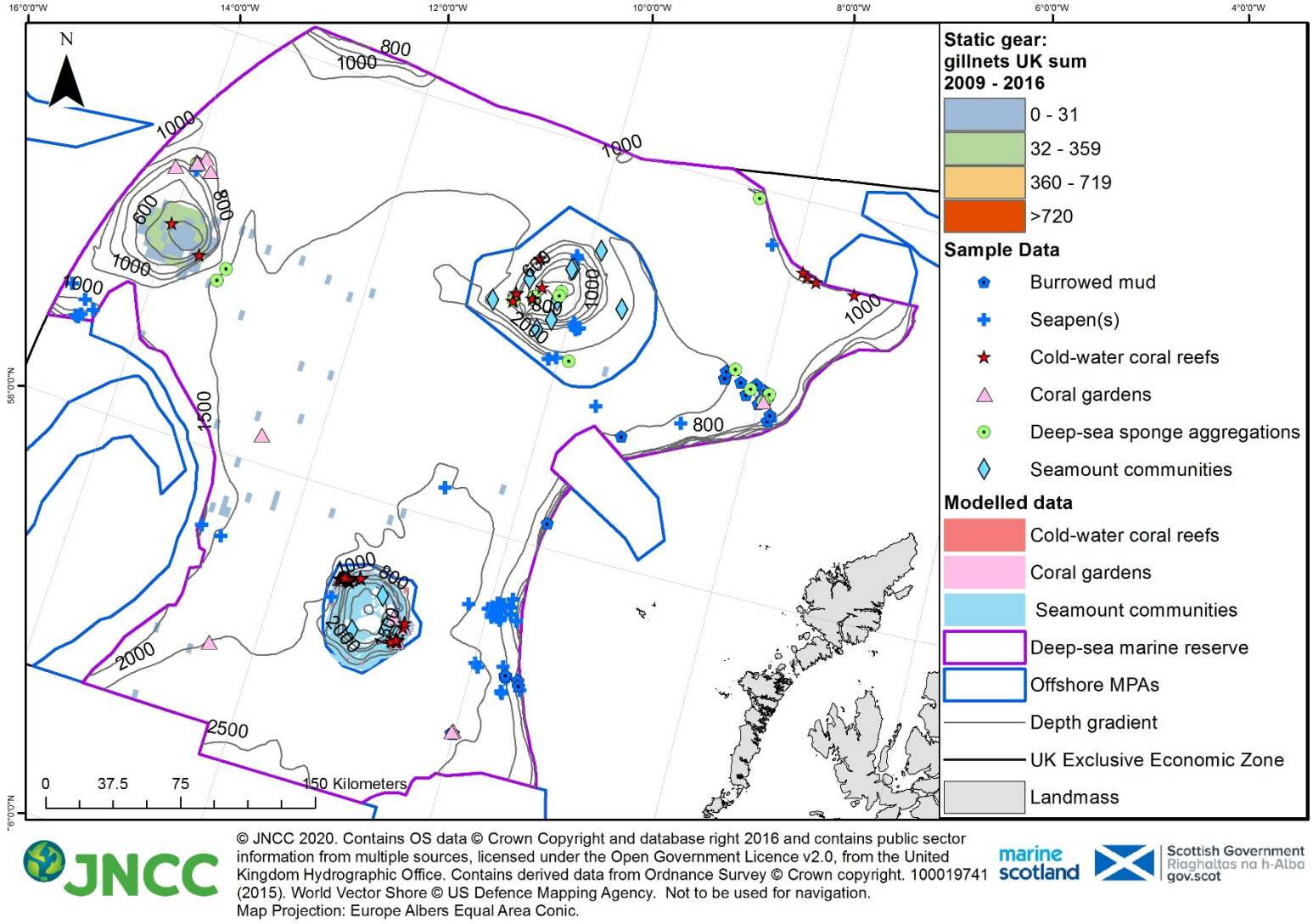

Figure 2l. Location of static gears gillnet UK fishing activity (2009-2016) in relation to protected VME features.

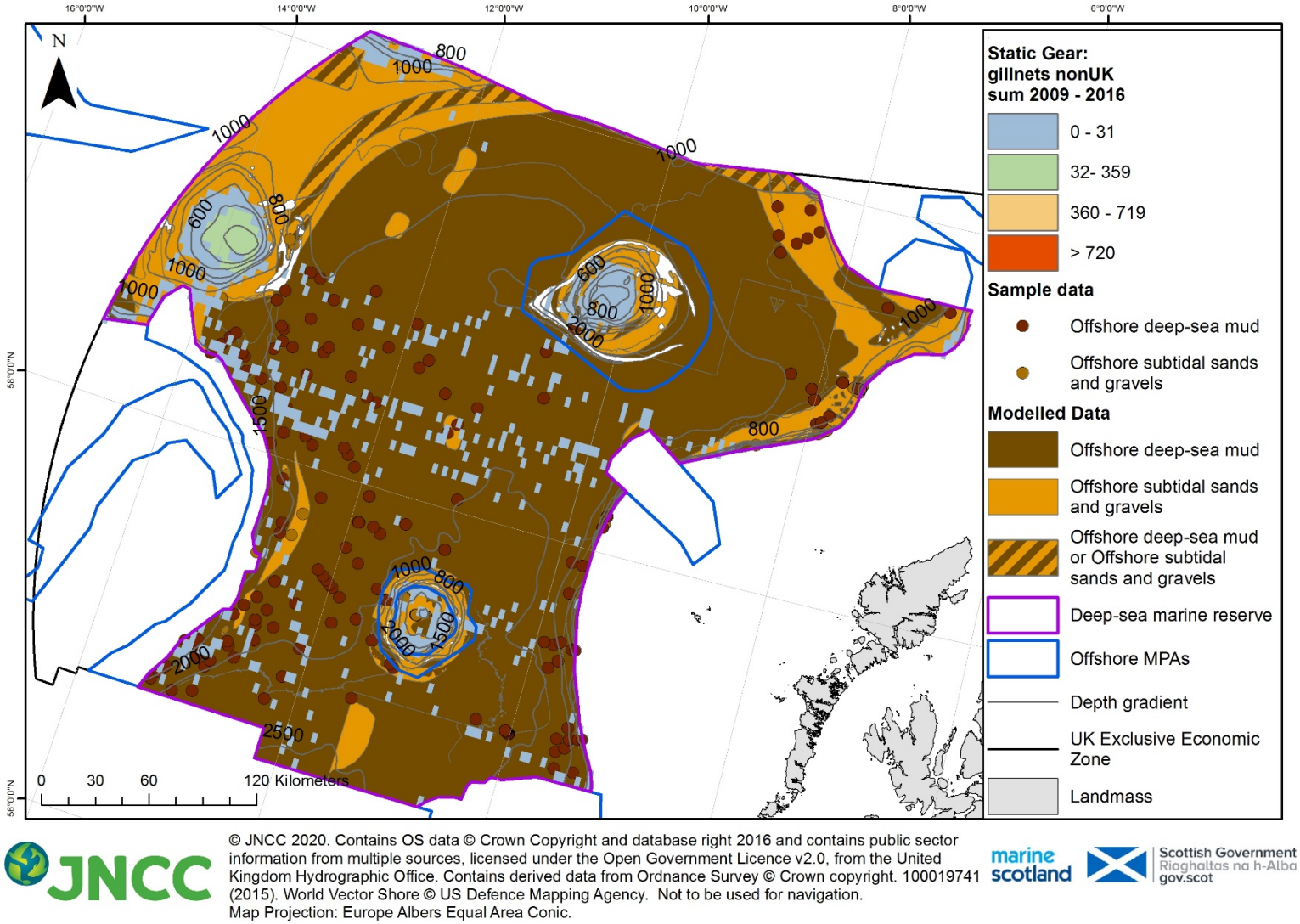

Figure 2m. Location of static gears gillnet non-UK fishing activity (2009-2016) in relation to protected sedimentary features.

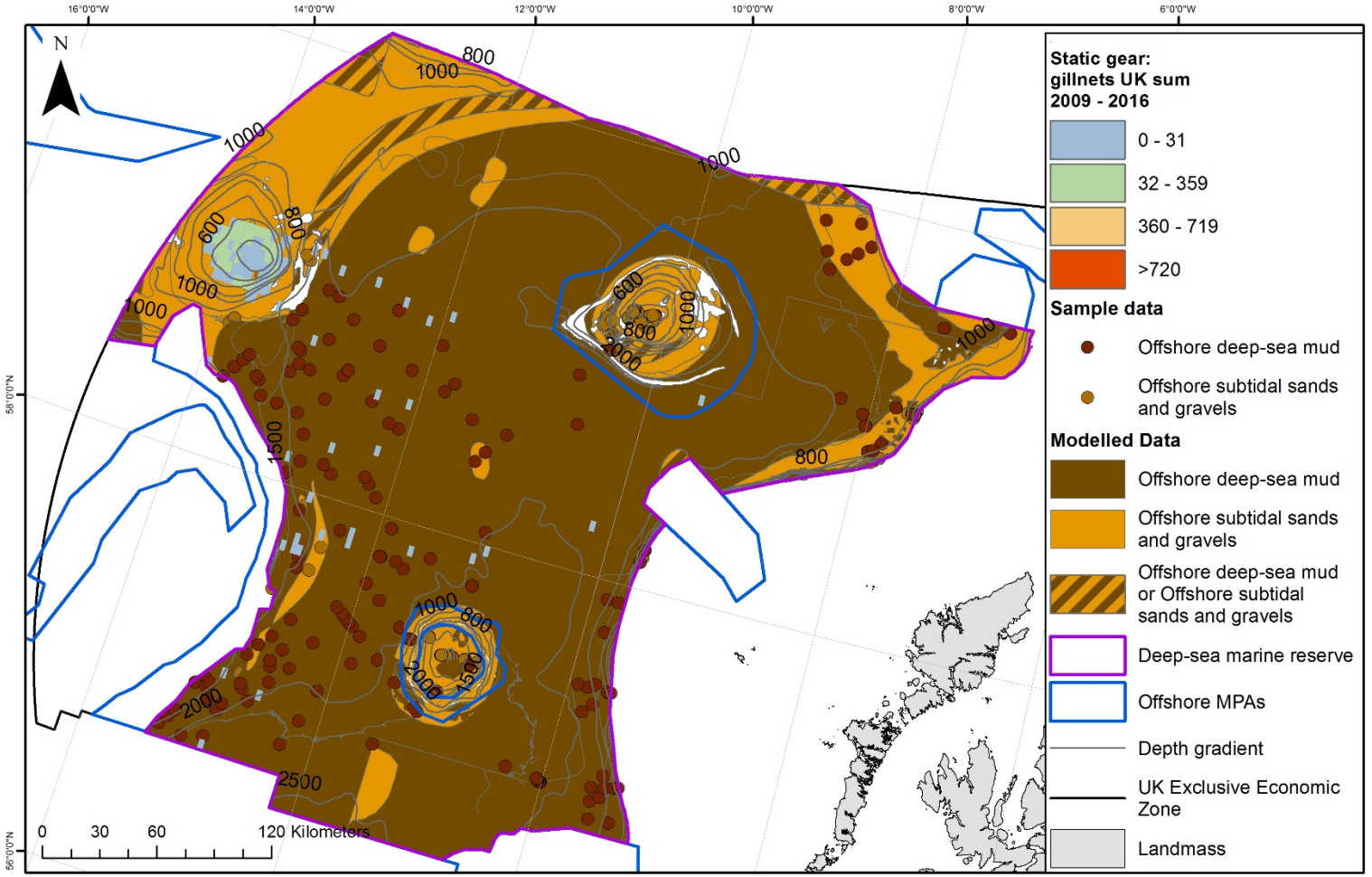

Figure 2n. Location of static gears gillnet UK fishing activity (2009-2016) in relation to protected sedimentary features.

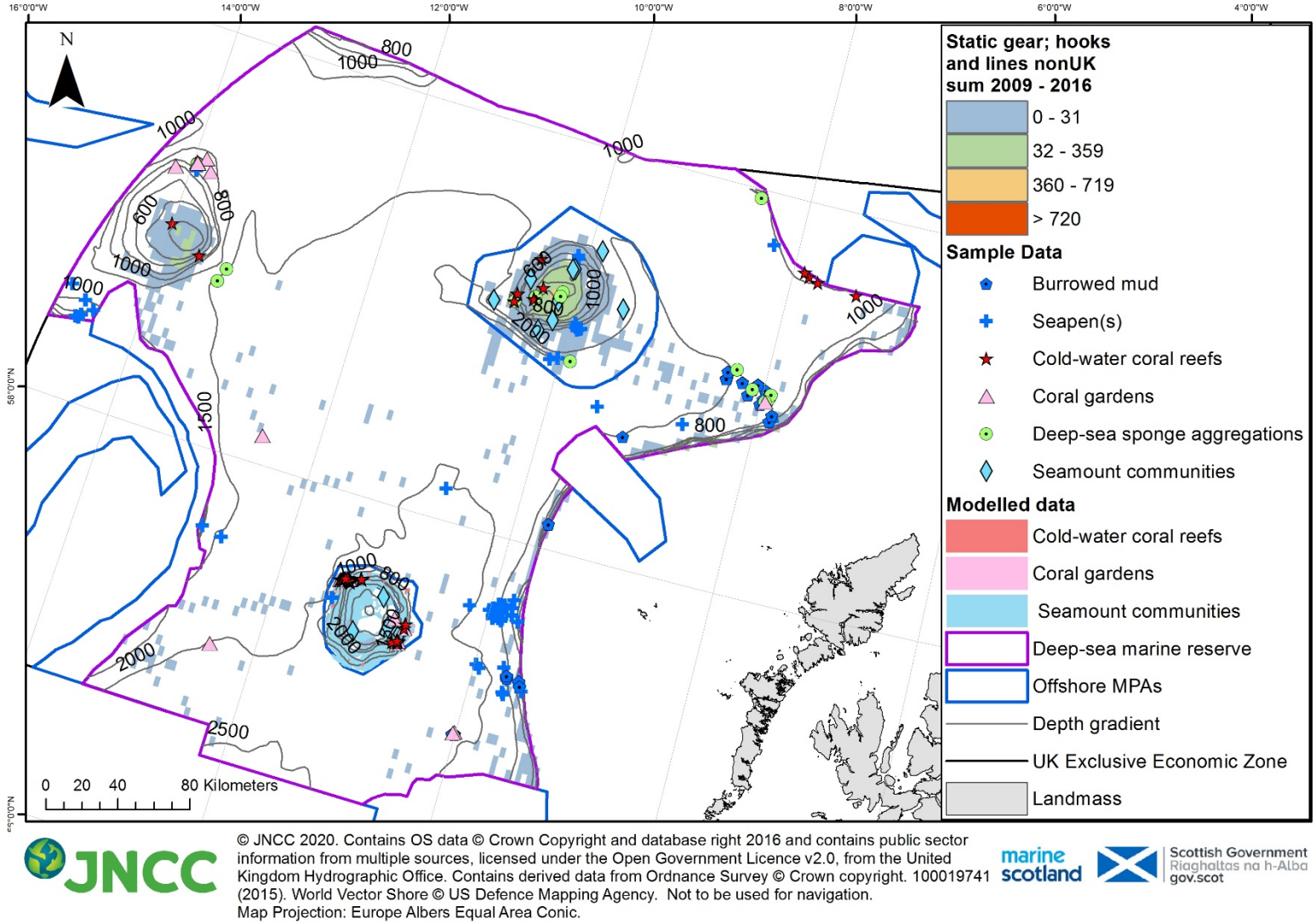

Figure 2o. Location of static gears hooks and lines non-UK fishing activity (2009-2016) in relation to protected VME features.

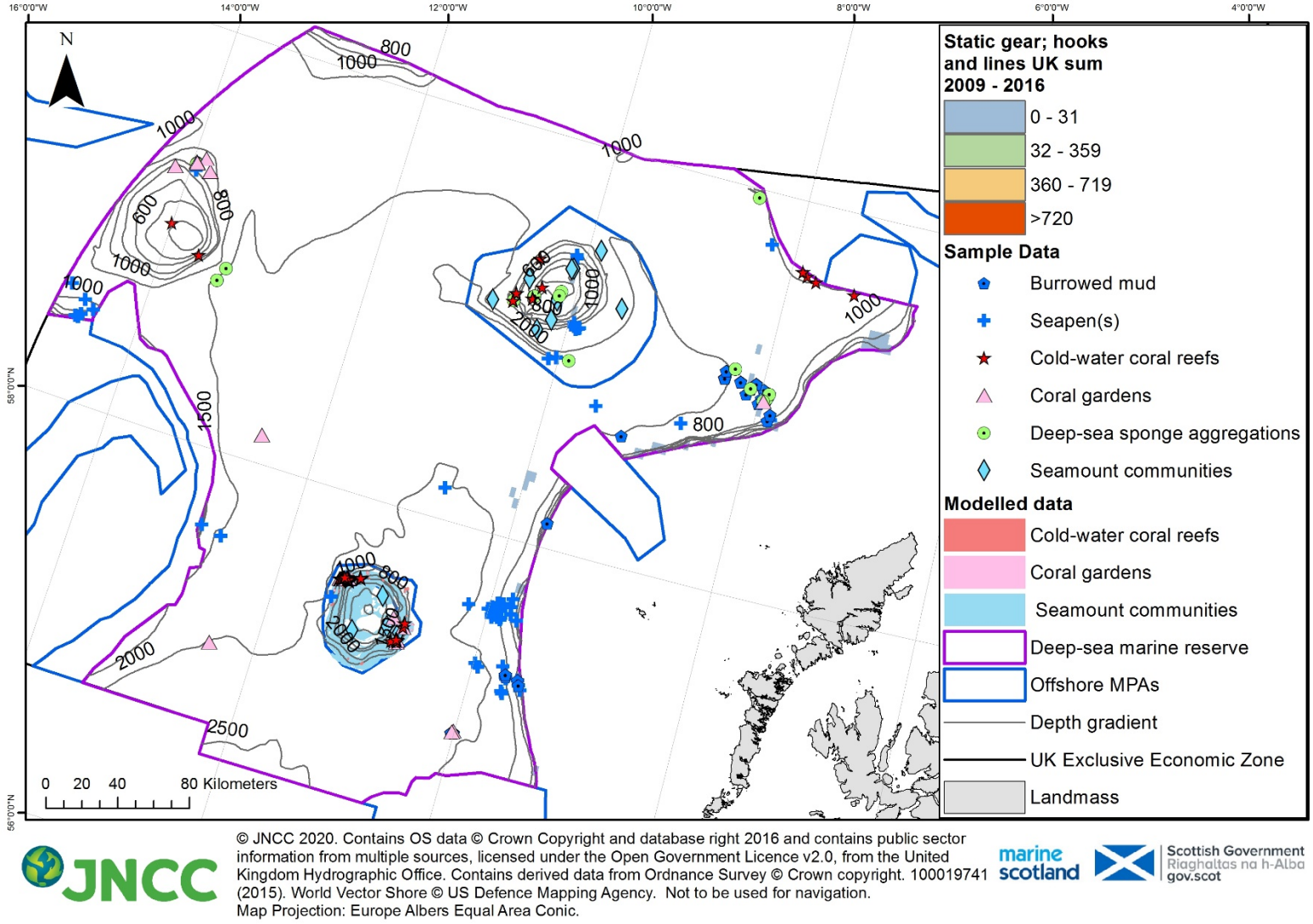

Figure 2p. Location of static gears hooks and lines UK fishing activity (2009-2016) in relation to protected VME features.

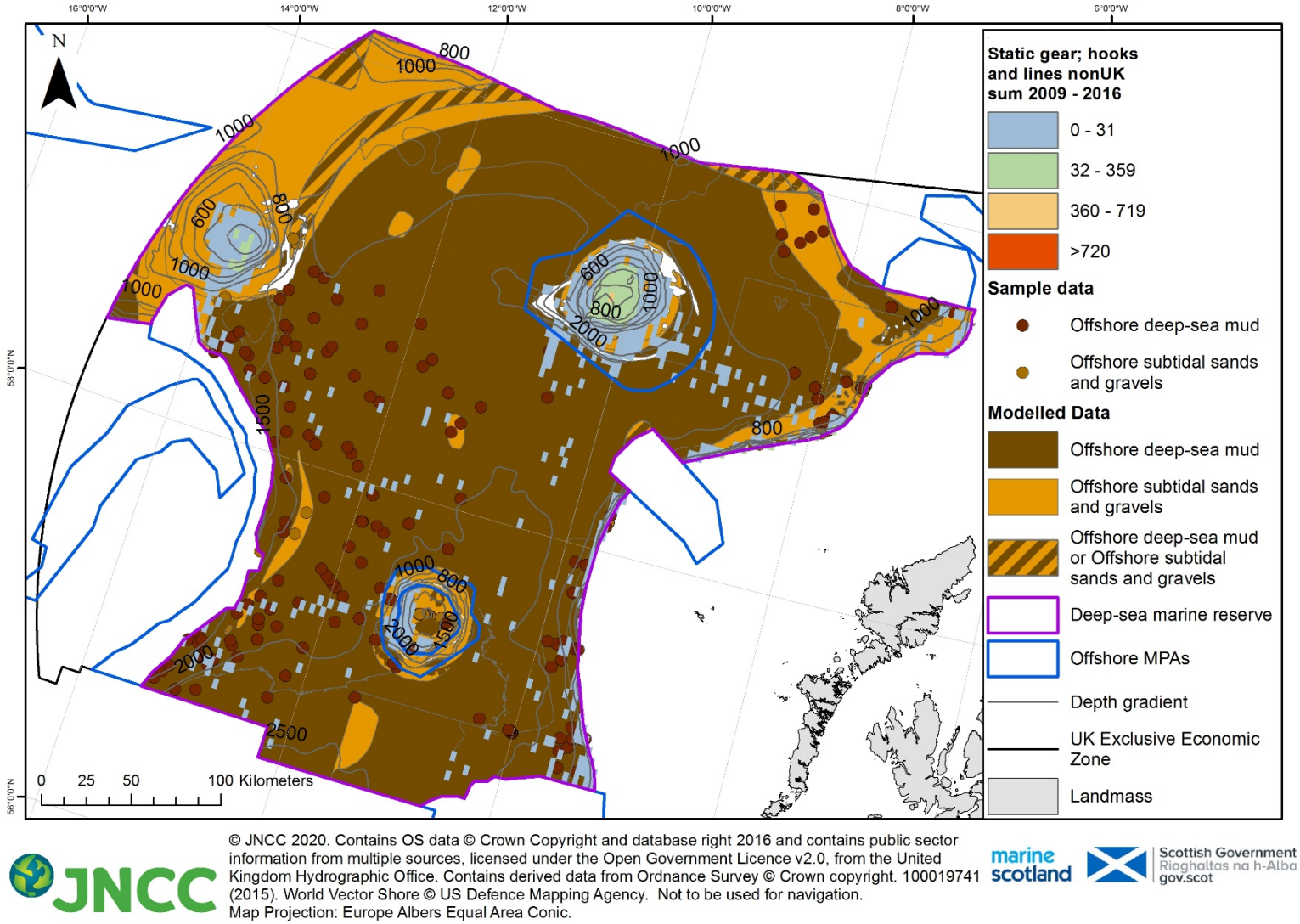

Figure 2q. Location of static gears hooks and lines non-UK fishing activity (2009-2016) in relation to protected sedimentary features.

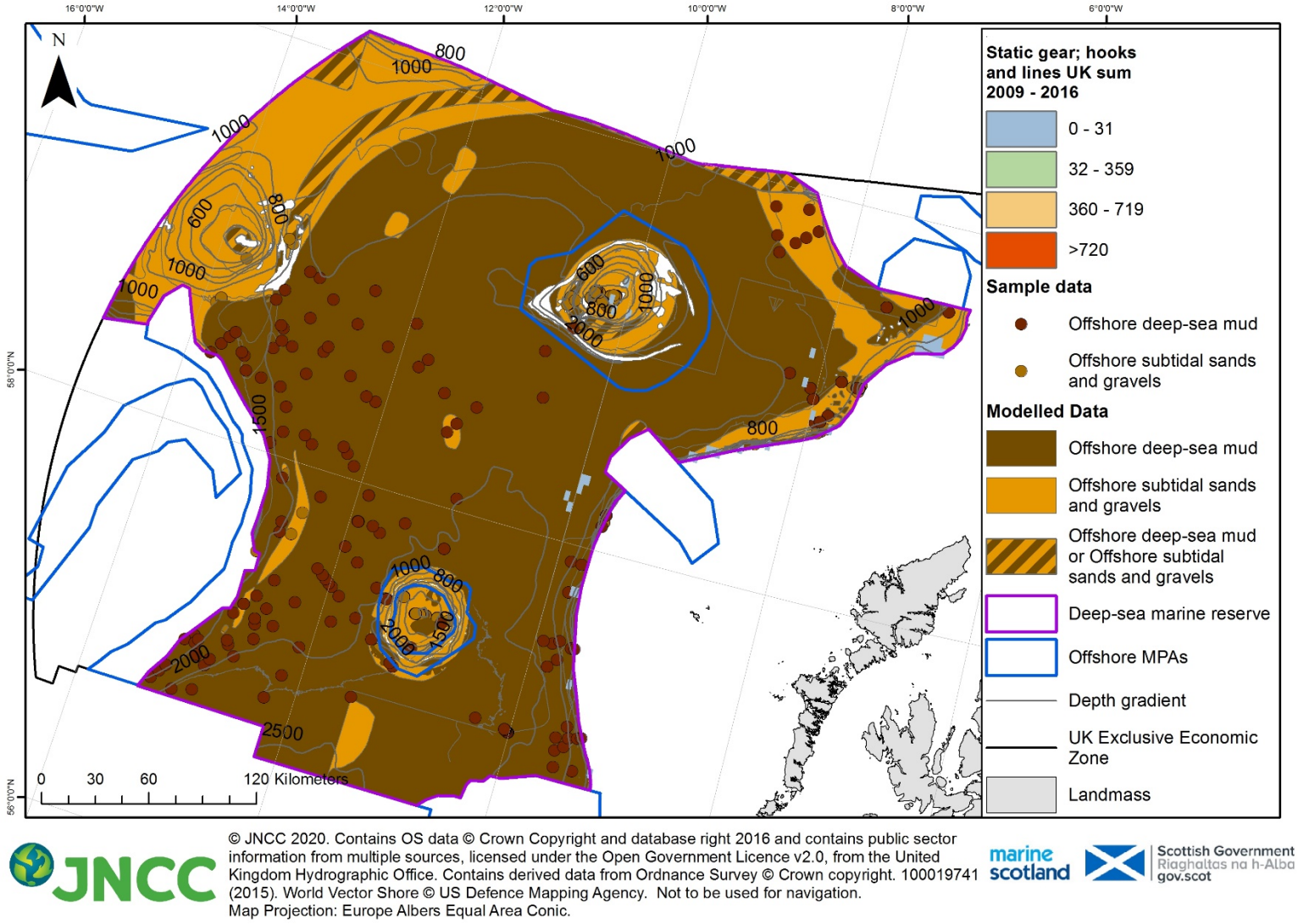

Figure 2r. Location of static gears hooks and lines UK fishing activity (2009-2016) in relation to proposed protected sedimentary features.

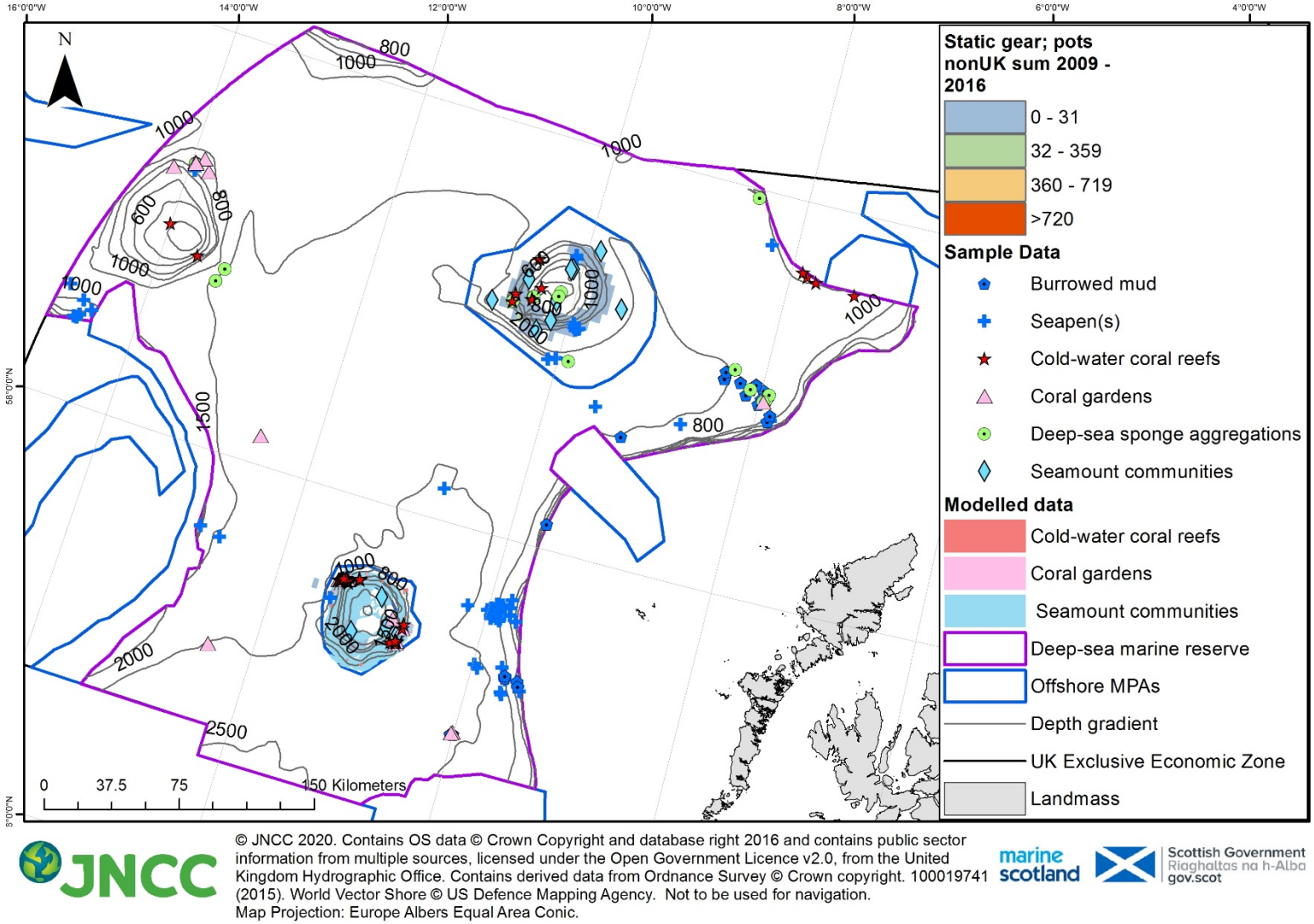

Figure 2s. Location of static gears pots non-UK fishing activity (2009-2016) in relation to protected VME features.

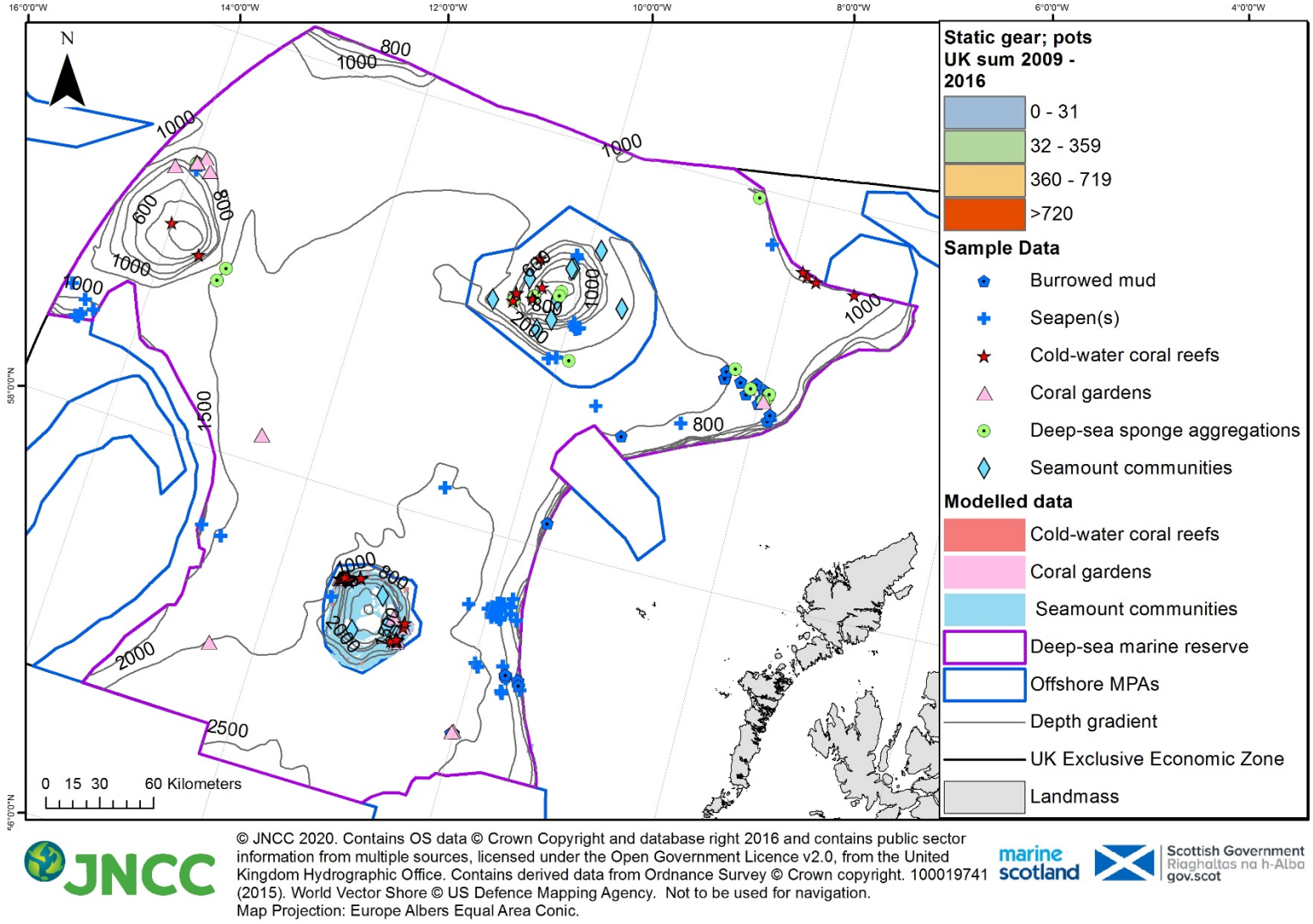

Figure 2t. Location of static gears pots UK fishing activity (2009-2016) in relation to protected VME features.

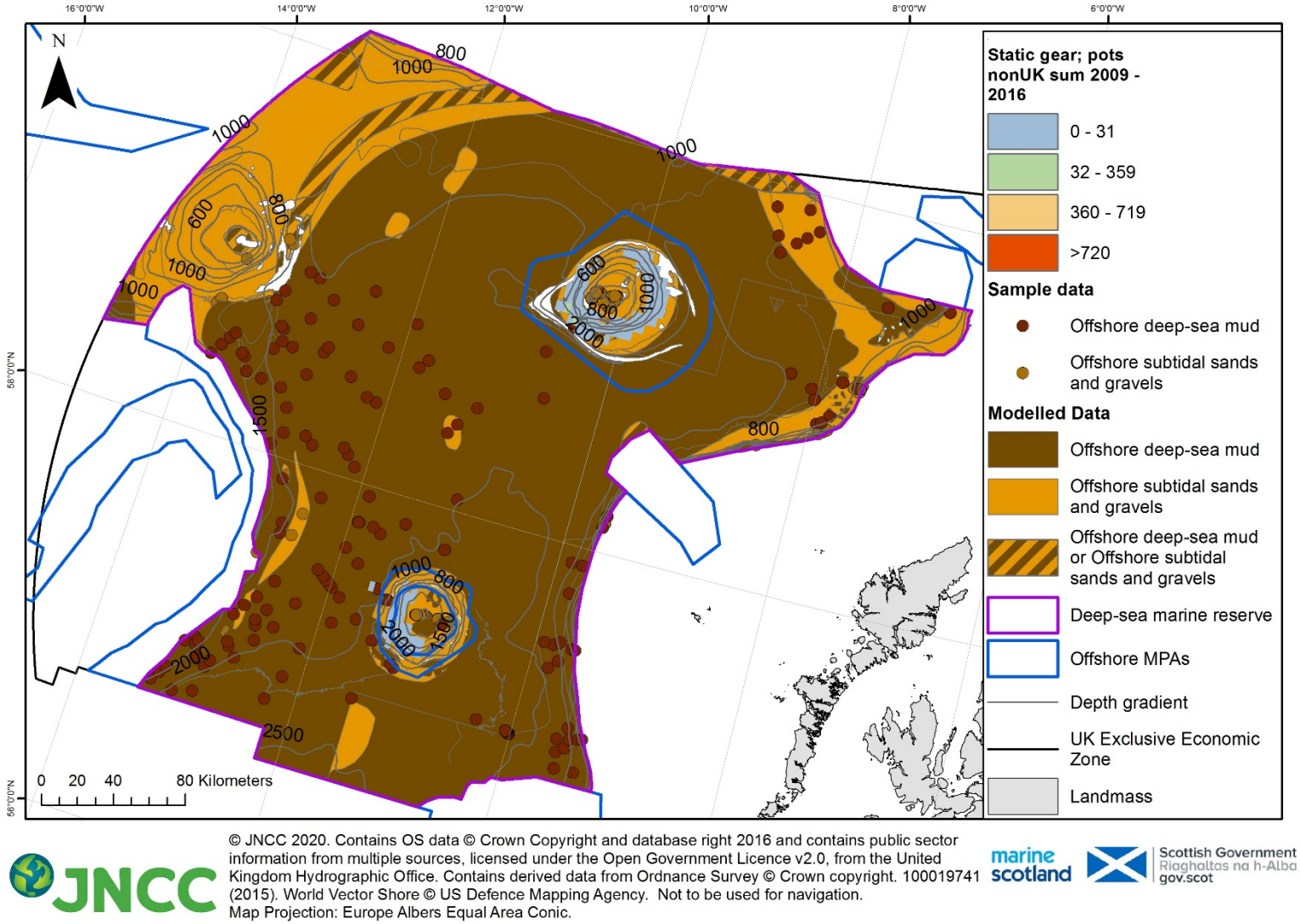

Figure 2u. Location of static gears pots non-UK fishing activity (2009-2016) in relation to protected sedimentary features.

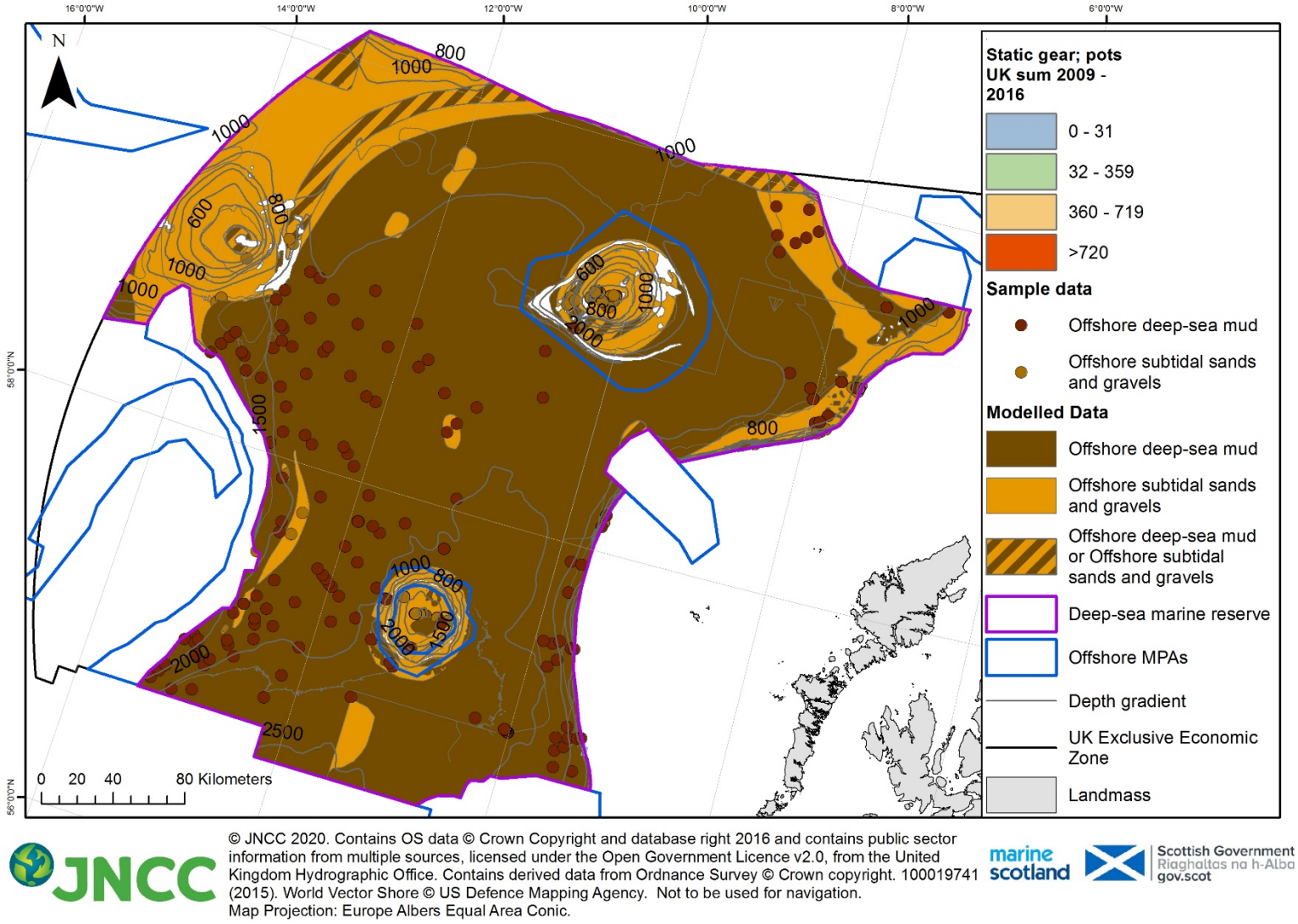

Figure 2v. Location of static gears pots UK fishing activity (2009-2016) in relation to protected sedimentary features.

4.2 Overview of existing management and whether additional measures are required

In the West of Scotland deep-sea marine reserve, there are measures already in place to restrict activities. These measures afford some protection to the protected features of the site but are not considered adequate to ensure favourable condition for all the protected features. The sections that follow provide JNCC's advice as to whether existing management is considered sufficient to achieve the conservation objectives of the protected features of the site; or whether additional management actions should be considered, by activity type.

Telecommunication cables
Telecommunications cables are not subject to Environmental Impact Assessment and therefore do not, in general, go through the marine licensing process. As such, they are classed as an unregulated activity within the context of management advice for this site.

JNCC advice: Early discussion with operators is welcomed regarding new telecommunications cable installation plans or for the maintenance/removal of existing cables.

Oil and Gas exploration
The Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) is the regulator for oil and gas activity in the UK offshore area and is responsible for making the decision as to whether a proposed activity and/or development is capable of affecting the protected features of the site.

For those activities and/or developments that OPRED considers require an EIA, JNCC is willing to engage at an early stage with OPRED and the operator to discuss the specific details of the proposed operation and/or development and offer advice on any potential effects.

In so doing, JNCC will make reference to information on the sensitivity of the protected features to proposed activities and/or developments that is publicly available through, for example, FeAST.

JNCC will consider the nature, scale, timing and duration of activities in providing advice. Early engagement will facilitate discussions on the information required for JNCC to advise on any possible implications to the protected features achieving their conservation objectives. If JNCC identify a potentially significant effect, mitigation measures may be advised. Any such advice provided as part of the licensing process will be site and operation specific.

JNCC advice: Additional mitigation measures may be required on a case-by-case basis to avoid hindering the achievement of the conservation objectives for the protected features of the site.

Ministry of Defence activity
The Ministry of Defence seek to manage its activities in a manner that minimises environmental impact. As part of its Marine Environment and Sustainability Assessment Tool (MESAT), the Royal Navy produce a layer for its electronic charts to provide advice to personnel on how military activities in the vicinity of designated MPAs may impact features. These electronic charts are used by Navy Commanders and other operational planners to ensure that military activities in the marine environment minimise their environmental impact. Environmental Protection Guidelines (Maritime) (latest version of the EPG(M)) have been developed over the past few years in consultation with JNCC on behalf of the UK Statutory Nature Conservation Bodies (SNCBs). These charts offer guidance for the whole UK marine area. Further information is available from this JNCC webpage.

JNCC advice: No additional management required.

Shipping activity
Shipping activities are regulated by the International Maritime Organisation and as such classed as an unregulated activity within the context of management advice for this site. Shipping is not regarded as capable of impacting the protected features.

JNCC advice: No additional management required.

Noise activity
Marine Scotland are the regulator for noise activities in the Scottish offshore area with the exception of activity related to oil & gas exploration (regulated by OPRED). JNCC have developed the Marine Noise Registry (MNR) on behalf of Defra and the Devolved Administrations to record human activities in UK seas that produce loud, low to medium frequency (10Hz – 10kHz) impulsive noise. As part of the application process, information on the nature of any proposed noise activities must be added to the registry before an application can proceed and guidance is available to support this.

JNCC advice: No additional management required.

Scientific research
Under the Marine Licensing (Exempted Activities) (Scottish Offshore Region) Order 2011 (as amended) sediment sampling and scientific instrument deployment are exempt from the requirement for a marine licence subject to certain conditions set out in Scottish Government guidance.

Codes of conduct are available which communicate to marine researchers, the importance of minimising impacts from their activities on the marine environment and set out guidelines and processes to follow to do this e.g. the Convention for the Protection of the Marine Environment of the North-East Atlantic and International Research Ship Operators codes of conduct. JNCC provides advice on request on how to minimise impacts on offshore MPAs to ensure the achievement of their conservation objectives are least hindered by research activities.

JNCC advice*:* JNCC should be notified of any scientific research taking place within the West of Scotland deep-sea marine reserve by email to offshoreMPAs@jncc.gov.uk.

Deep-sea mining
Whilst deep-sea mining does not currently take place within the site, there has been a significant amount of research taking place to help support development of the necessary regulatory frameworks and understanding of impacts to generate the evidence base for decision-making (e.g. the Manging Impacts of Deep Sea Resource Exploitation or MIDAS Project).

JNCC advice: As an evolving industry, JNCC advise a precautionary approach whereby no licenses should be granted for deep-sea mining intended to take place within the site.

Fishing activity
A range of measures to manage the impacts from fishing activities are already in place or proposed within the site, to restrict the use of certain gears or target fish species. These are set out in figures 3a-e.

In compliance with Article 8 of the deep-sea Regulation (EU) 2016/2336, a ban on the use of all bottom-contacting mobile gear has been introduced deeper than 800m and this applies across the entire area of the site. The same regulation also restricts bottom trawling below 400m where VMEs are present or are likely to occur. Fishing with bottom-set gillnets, entangling nets and trammel nets below 600m is also prohibited, and there are restrictions on

their use between 200m and 600m, according to Council Regulation (EC) no. 850/98, as amended by EU No 227/2013.

In addition, there are two MPAs which fall within the West of Scotland deep-sea marine reserve boundary for which fisheries management proposals have been prepared to afford protection to the protected features of those sites. The draft proposals are for site-wide restrictions on all demersal gears (Figures 3e and f).

The wider fish stocks of the protected fish features are managed through the Common Fisheries Policy by way of Total Allowable Catch (TAC). For Orange roughy, Portuguese dogfish and Leafscale gulper shark, the current TAC is set to zero, though there is a small transferable quota for EU vessels permitting limited landings (10 t) of unavoidable by-catch of the deep-sea shark species (WGDEEP, 2018). The TAC in 2018 for Roundnose grenadier was 3120 t, in 10 763 t for Blue ling (WGEF, 2018).

Blue ling are afforded additional protection through blue ling seasonal closures which were introduced in 2009 (Council Regulation (EC) no. 850/98). Figure 3c shows the extent of seasonal closures. These restrictions protect spawning aggregations along the edge of the Scottish continental shelf and at the edge of Rosemary Bank, imposing a catch restriction of < 6 t per trip.

The deep-sea fish features are protected from much of the bycatch pressure through the regulations outlined above. However, they may still be caught as bycatch in long-line and other static fisheries and to a lesser extent through demersal trawling in the site. Though not common, these species can also occur in waters < 800m outside of the area covered by deep-sea Regulation (EU) 2016/2336 and EU No 227/2013 and so may still be caught as by-catch in demersal trawls and bottom-set gillnets, entangling nets and trammel nets above 600m.

The habitat features in the site are similarly afforded much protection through existing fishery management. However, VMS indicates that static gear use (where they are not prohibited or restricted under Council Regulation (EC) no. 850/98) occurs over topographic features such as Anton Dohrn Seamount, Rosemary Bank Seamount and George Bligh Bank. Fragile habitats with erect and slow growing species such as: cold-water coral reefs, coral gardens, deep-sea sponge aggregations and seamount communities occur on these topographic features and are highly vulnerable to damage from static gears where they contact the seabed. Areas shallower than 800m within the site (such as Anton Dohrn Seamount, Rosemary Bank Seamount and George Bligh Bank) are not currently protected from demersal mobile fishing by the deep-sea Regulation (EU) 2016/2336, presenting a risk to the achievement of the conservation objectives for these features.

JNCC advice: JNCC fully support the draft management proposals for Rosemary Bank Seamount to prohibit the use of all static and demersal mobile gears within the full extent of Rosemary Bank Seamount MPA. JNCC also fully support the draft management proposals for Anton Dohrn Seamount to prohibit demersal mobile and all static gears from the SAC.

Additional management is required to support recovery of the protected biodiversity features to achieve favourable condition. JNCC advise the prohibition of demersal mobile gears in areas shallower than 800m within the site, and the prohibition of all bottom-contacting static gears where aggregations of proposed VME features occur (Rosemary Bank Seamount, Anton Dohrn Seamount, George Bligh Bank and the north-east corner of the site). To support recovery of the protected sedimentary features (offshore subtidal sands and gravels, and offshore deep-sea muds) JNCC advise that bottom-contacting static gears should be restricted or more ideally removed from the extent of these features.

As our current knowledge of the protected deep-sea fish species is limited, JNCC advise that montioring efforts focus on improving our understanding of their life history characteristics. In

addition, in the case of Gulper shark/Leafscale gulper shark taking a sample of scales and tissue would be useful for identification purposes where any of these species are caught as bycatch.

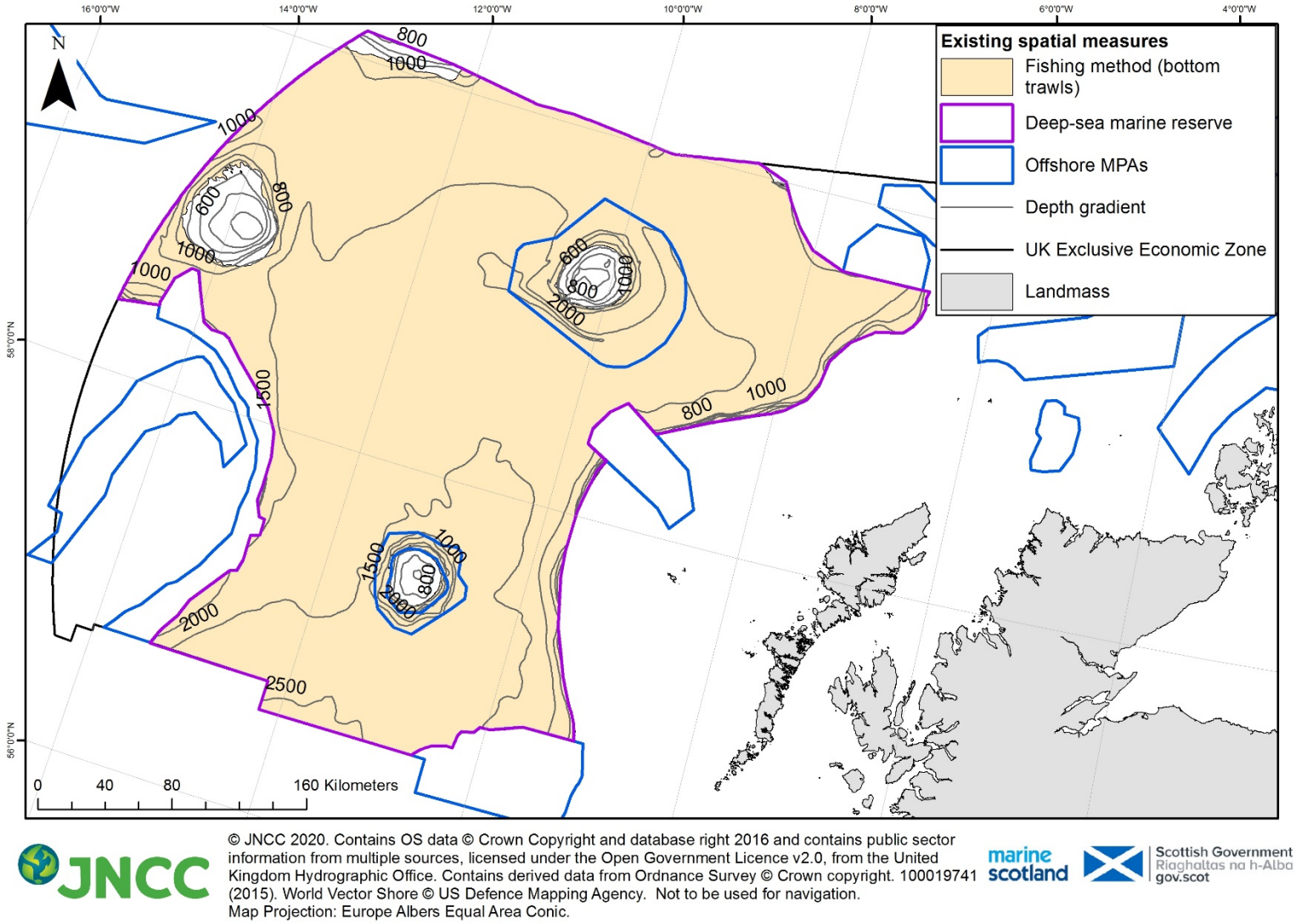

Figure 3a. Location of existing spatial measures in the West of Scotland deep-sea marine reserve for permanent closure to demersal trawling.

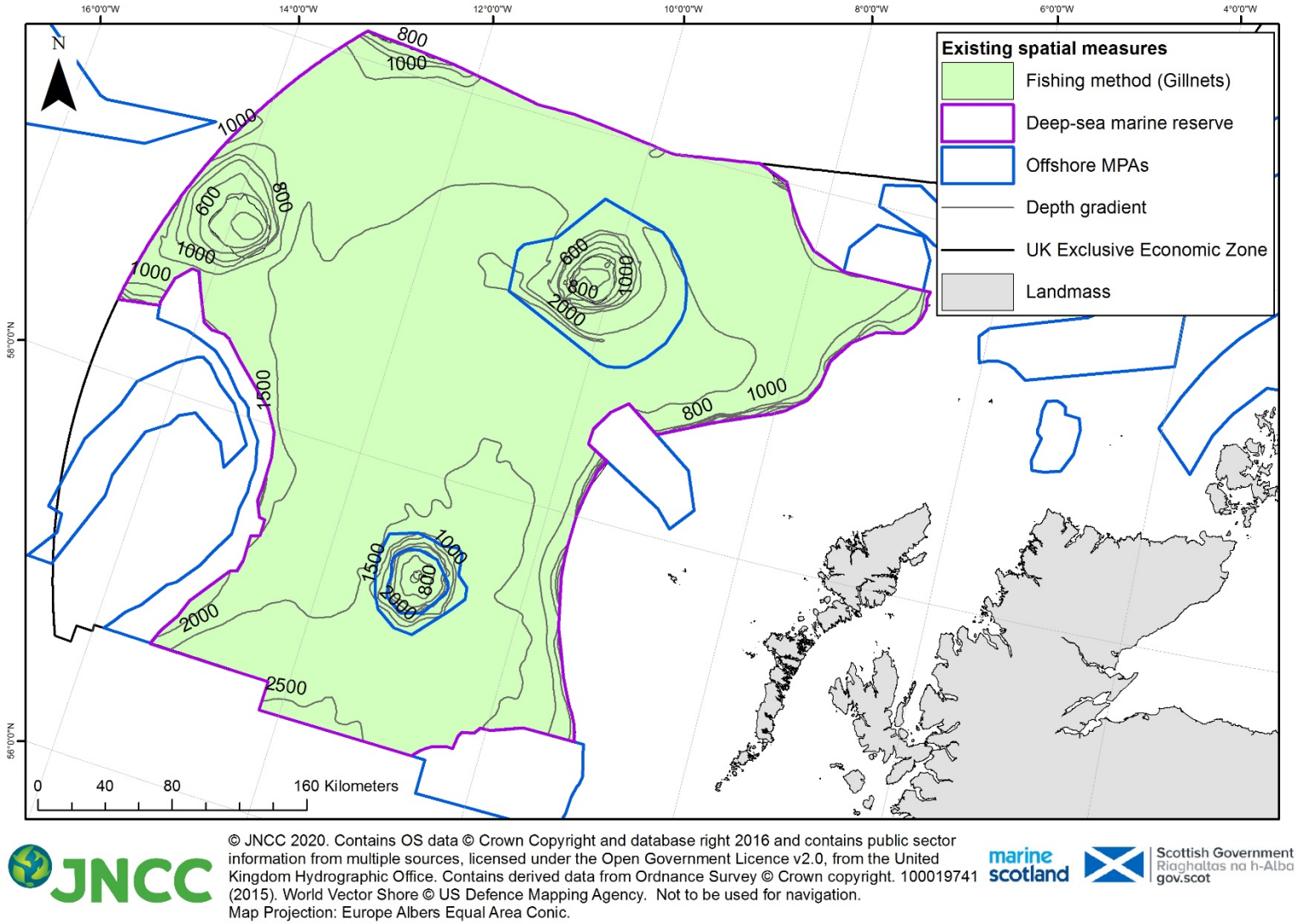

Figure 3b. Location of existing spatial measures in the West of Scotland deep-sea marine reserve for closure to gillnets, entangling nets and trammel nets in areas where depth is greater than 200m.

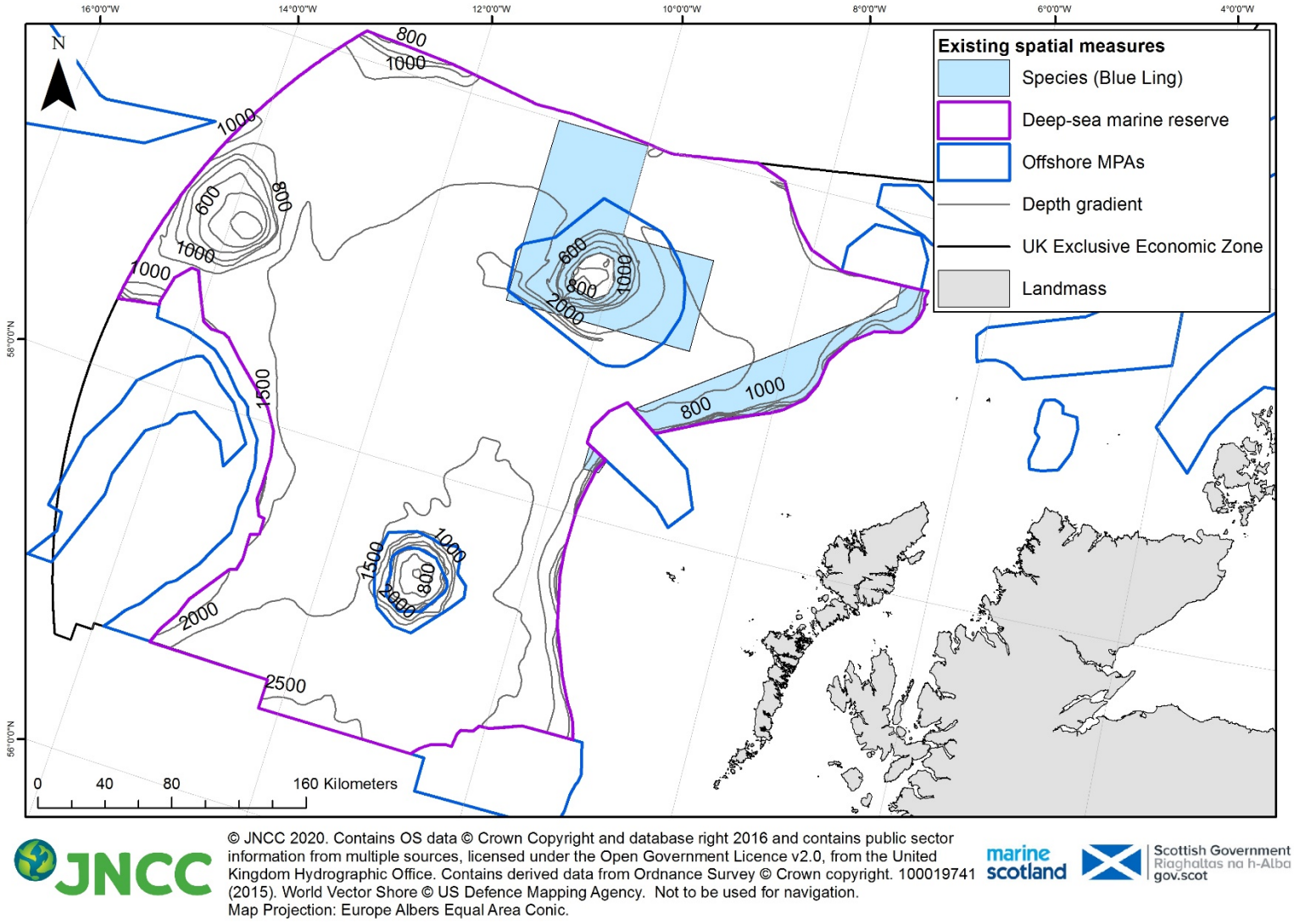

Figure 3c. Location of existing spatial measures in the West of Scotland deep-sea marine reserve for seasonal closure to Blue ling fisheries (1st March to 31st May).

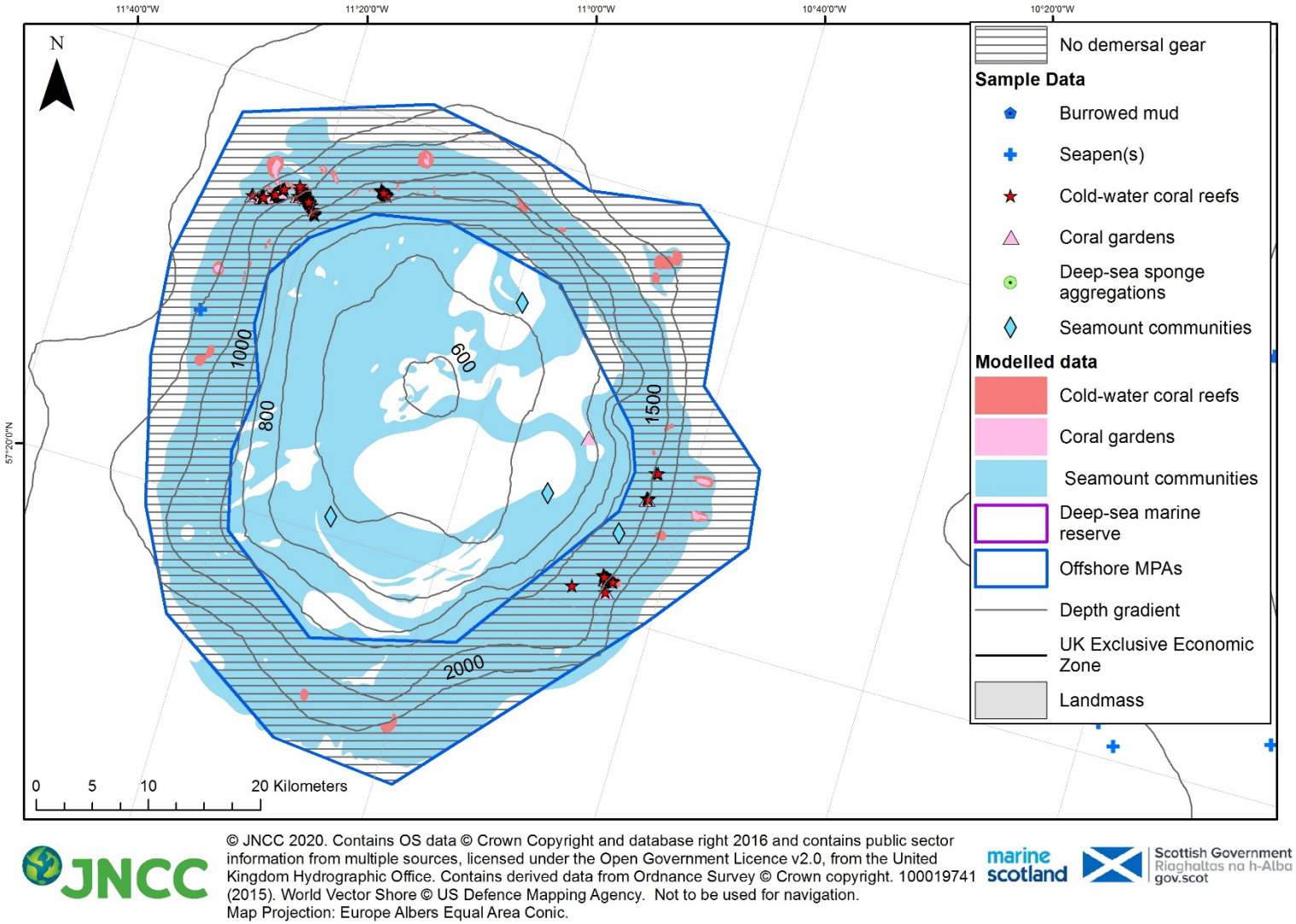

Figure 3d. Draft management proposals for Anton Dohrn SAC, reproduced from [Marine Scotland North-west waters proposal 2016].

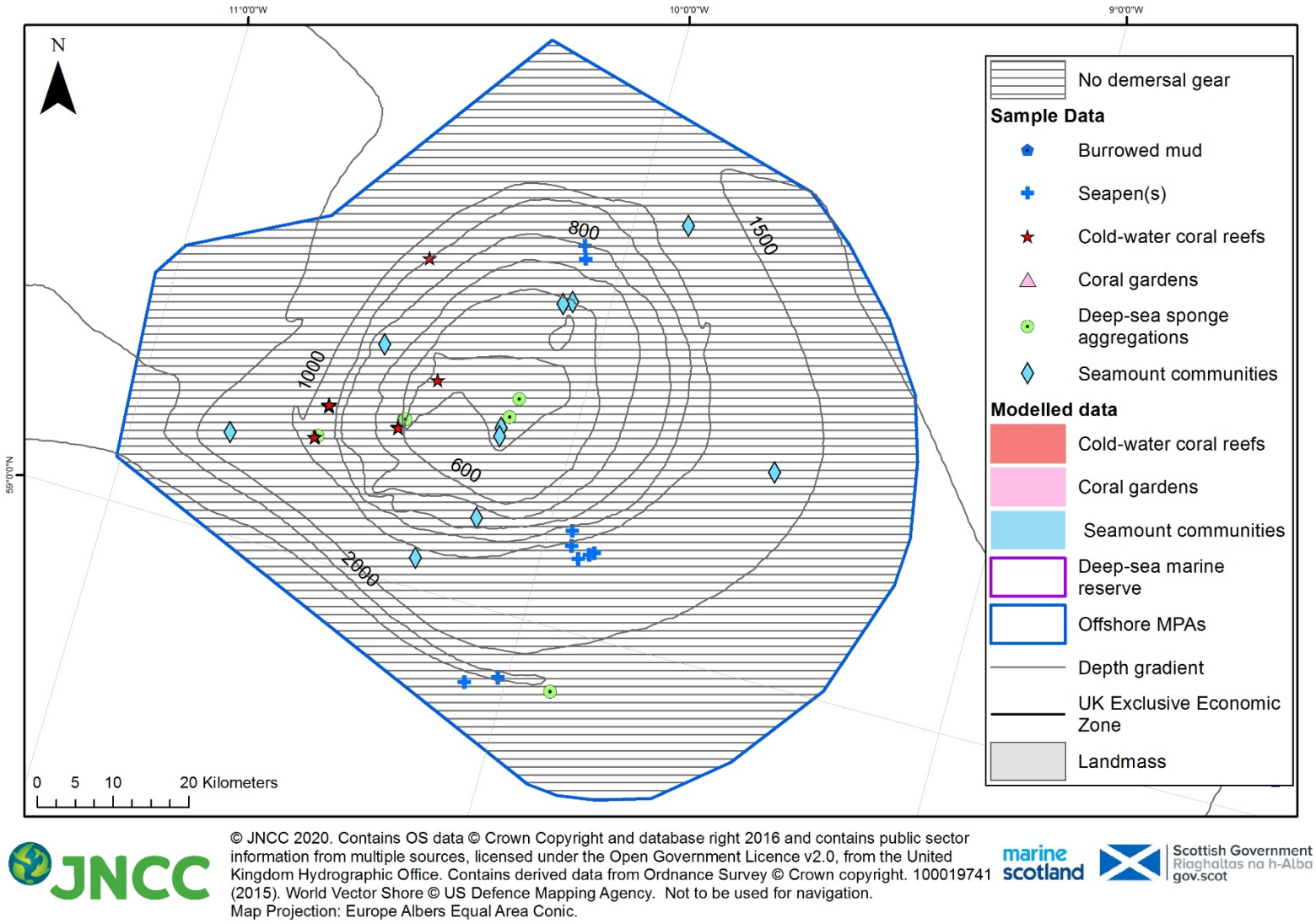

Figure 3e. Draft management proposals for Rosemary Bank Seamount MPA, reproduced from Marine Scotland North-west waters proposal 2016.

Additional references not included in footnotes:

Carroll, A.G., Przeslawski, R., Duncan, A., Gunning, M., and Bruce, B. (2017). A critical review of the potential impacts of marine seismic surveys on fish and invertebrates. *Marine Pollution Bulletin* **114**, 9-24. Available online from: https://www.sciencedirect.com/science/article/pii/S0025326X16309584

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Mortensen, P.B., Buhl-Mortensen, L., Gordon, D.C.J., Fader, G.B.J., McKeown, D.L. & Fenton, D.G., (2005). Effects of fisheries on deepwater gorgonian corals in the Northeast Channel, Nova Scotia. In: Barnes, B.W., Thomas, J.P. (Eds.), Benthic Habitats and the Effects of Fishing. American Fisheries Society Symposium, pp. 369-382

Muñoz, R.D., Murillo, F.J., Sayago-Gil, M., Serrano, A., Laporta, M., Otero, I., & Gomez, C., (2010). Effects of deep-sea bottom longlining on the Hatton Bank fish communities and benthic ecosystem, north-east Atlantic. *Journal of the marine biological association of UK*, **91**, 939-952.

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