



**Fisheries Management Options Paper:
BRAEMAR POCKMARKS SPECIAL AREA OF CONSERVATION**

JNCC

**2023
(2014)**

For further information please contact:

JNCC, Quay House, 2 East Station Road, Fletton Quays, Peterborough PE2 8YY

<https://jncc.gov.uk/>

Communications@jncc.gov.uk

This document should be cited as:

JNCC. 2023. Fisheries Management Options Paper: Braemar Pockmarks Special Area of Conservation. <https://hub.jncc.gov.uk/assets/9376d37a-0b69-44e9-b291-07e5da663017#braemar-pockmarks-management-options-paper.pdf>

Evidence Quality Assurance:

This document is compliant with JNCC's Evidence Quality Assurance Policy

<https://jncc.gov.uk/about-jncc/corporate-information/evidence-quality-assurance/>

Please note that this Fisheries Options Paper was developed in April 2014 to feed into the management measure proposal development. Prior to publication in April 2023, the document has been checked and links updated.

Whilst every effort is made to ensure that the information in this resource is complete, accurate and up-to-date, JNCC is not liable for any errors or omissions in the information and shall not be liable for any loss, injury or damage of any kind caused by its use. Whenever possible, JNCC will act on any inaccuracies that are brought to its attention and endeavour to correct them in subsequent versions of the resource, but cannot guarantee the continued supply of the information.

This resource and any accompanying material (e.g. maps, data, images) is published by JNCC under the [Open Government Licence](#) (OGLv3.0 for public sector information), unless otherwise stated.

The views and recommendations presented in this resource do not necessarily reflect the views and policies of JNCC.

1. Management Options Summary

Table 1. Fisheries management options for mobile and static bottom contact fishing gears.

Fishing Activity	Management options
<p>Demersal trawling</p> <p>Boat dredging</p> <p>Beam trawling</p> <p>Demersal seine netting</p>	<p>No additional management: There is a significant risk of not achieving the conservation objectives for the submarine structures made by leaking gases.</p> <p>Reduce/limit pressures: This option would reduce, but not entirely eliminate, the risk of degradation to the submarine structures caused from leaking gases feature as a result of direct impact from fishing activities. Appropriate management could include closure of the known extent of the feature within the site. However, a risk of impact with patches of feature not identified during survey would remain. Recent survey evidence suggests that patches of feature extend across the site beyond those listed in the original submission thus the risk of damage to the feature from fishing activity within the site is high. Although the risk of damage to the feature is likely to be highest for heavy gear components, restrictions may be appropriate for all bottom contact gears to minimise the risk of fragmentation of exposed feature. Areas to be covered by management restrictions would include a buffer zone around the known features equal to three times the water depth to reduce any risk of accidental contact with the feature. The location of areas to be covered by management restrictions would be decided in consultation with fishers.</p> <p>Remove/avoid pressures: This option would reduce the risk of degradation to any submarine structures made by leaking gases feature within the site boundary to the lowest possible levels. Restrictions would be required for all bottom contact gears within the full extent of the site boundary. The boundary already includes a buffer zone around the known features equal to three times the water depth to reduce any risk of accidental contact with the feature.</p>
<p>Static gears</p>	<p>No additional management: The risk of deterioration of the submarine structures made by leaking gases from set netting is considered minimal. This option is considered appropriate for all bottom contacting static gear. However, if static gear fishing were to increase and monitoring showed evidence of detrimental effects, it may be necessary to apply restrictions in the future.</p>

2. Introduction

Braemar Pockmarks Special Area of Conservation (SAC) is located in the Northern North Sea Regional Sea (JNCC, 2004; Defra 2004), approximately 240km east of the Orkney Islands (Figure 1). Two of the pockmarks at the site contain the Annex I habitat “Submarine structures made by leaking gases”. Large blocks, pavement slabs, and smaller fragments of methane derived authigenic carbonate have been deposited through a process of precipitation during the oxidation of methane gas. There is also evidence of carbonate rock presence within the site boundary at a location not associated with a pockmark (Hartley, 2005).

Carbonate structures provide a habitat for marine fauna usually associated with rocky reef, as well as highly specific chemosynthetic organisms which feed off both methane (seeping from beneath the seafloor) and its by-product, hydrogen sulphide (Judd, 2001). Larger blocks of carbonate also provide shelter for fish species such as wolf-fish, cod, haddock, and conger eel. Further details of the SAC can be found in the [Braemar Pockmarks site summary document](#).

A number of fishing activities take place in the area overlapping the Braemar Pockmarks site, including single and pair otter trawling, *Nephrops* trawling and Scottish seine netting. The main demersal target species is *Nephrops* with haddock, cod, monkfish, saithe and whiting also being landed. The trawl fishery in the area is mostly prosecuted by UK vessels with evidence of Danish activity also occurring. There is limited evidence of static gear activity within the site, with any potential activity being associated with non-UK vessels (Danish) only. Activity of fishing vessels smaller than 15m in the area is unknown, although it is considered unlikely.

This document has been produced to provide background information on the development of fisheries management for the Braemar Pockmarks SAC. It will be used during discussions with fisheries stakeholders to explore fishing current activities and the potential interactions these may have with the protected features. Future fishing activities may also be considered.

This document describes the known location and extent of protected features (based on the most recent survey data, see Figure 2) and the current knowledge of locations used for various fishing activities. It also presents management options for each of those activities that are considered capable of having an effect on the protected features. The document provides stakeholders with an opportunity to participate in the early stages of developing appropriate management options to ensure that the Braemar Pockmarks SAC makes a genuine and long-lasting contribution to the network of protected areas.

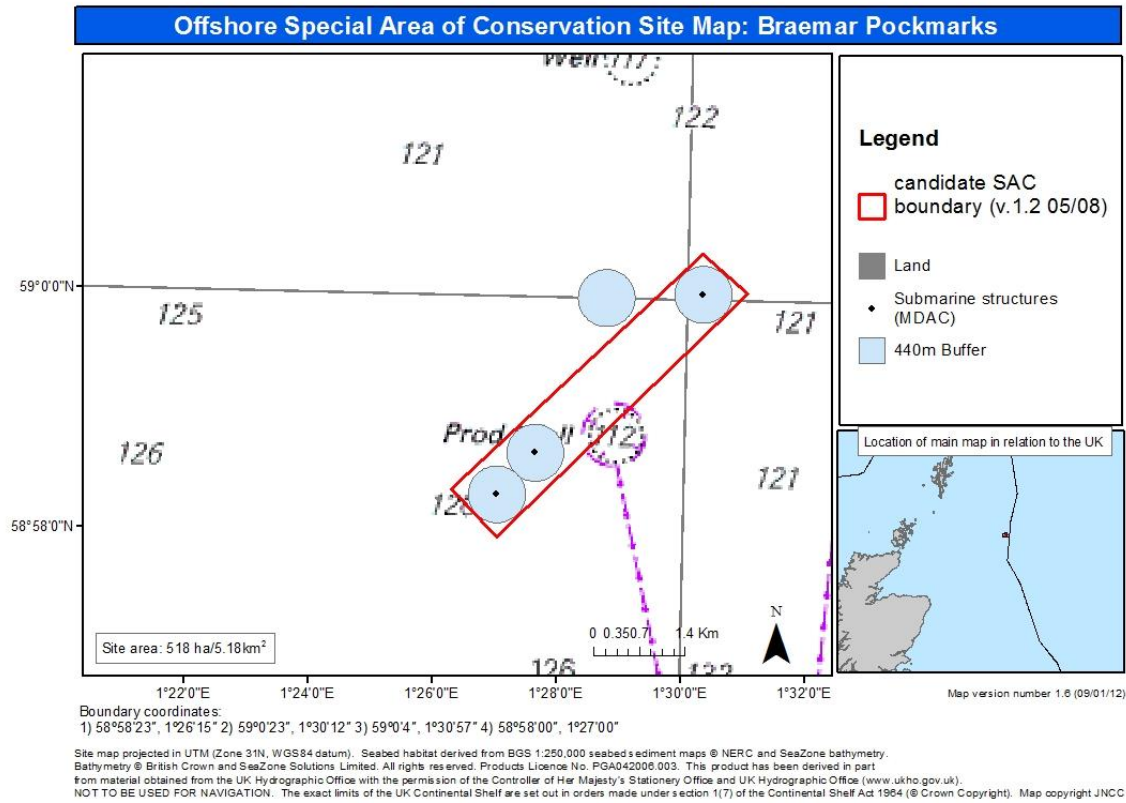


Figure 1. Site map of the Braemar Pockmarks SAC and its location in relation to the UK.

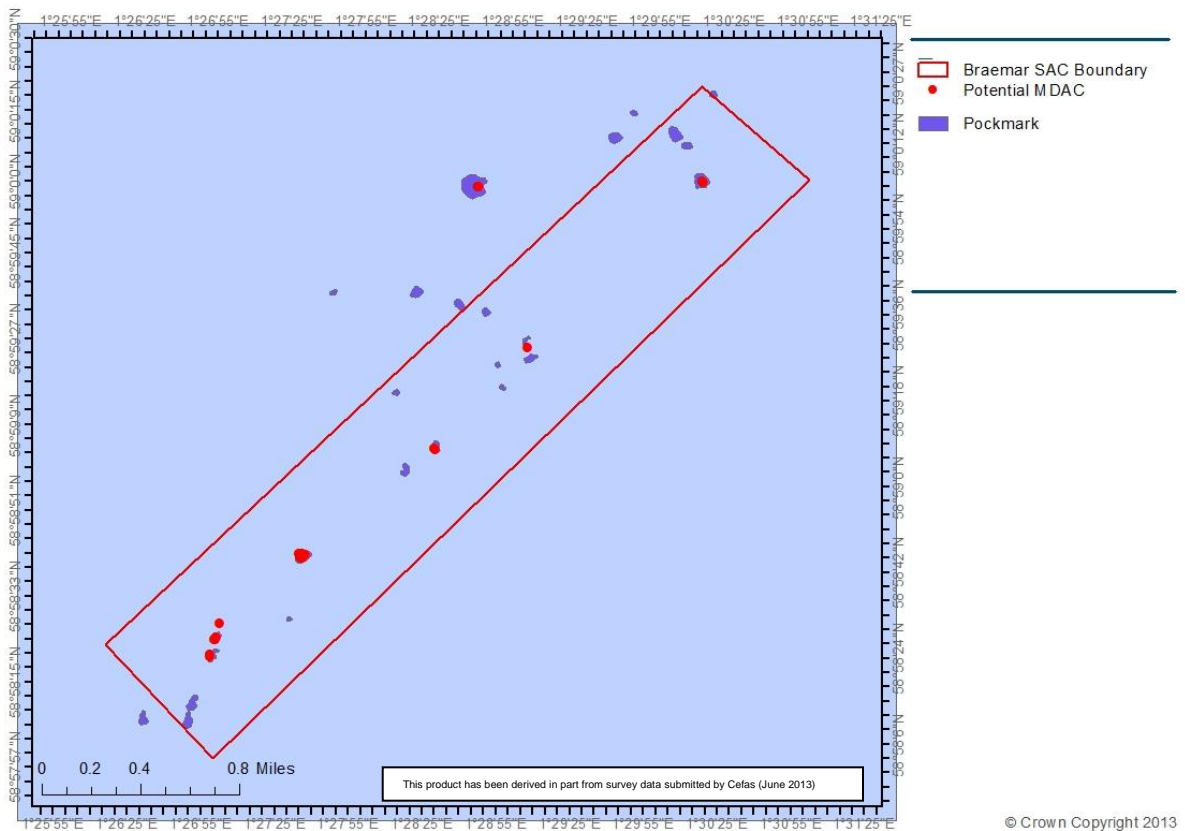


Figure 2. Location of submarine structures made from leaking gases (i.e., MDAC) based on 2012 survey data.

3. Roles

The role of JNCC is to advise the Scottish Government on management options for the Braemar Pockmarks SAC. In doing this, JNCC's aim is to ensure the conservation objectives for the protected features are met.

Marine Scotland will lead discussions on management with stakeholders. They will consider JNCC's advice and will lead on the development of specific management measures. They will be responsible for making recommendations to Scottish Ministers on these measures.

Stakeholders can provide additional evidence to support the development of management measures, including local knowledge of the environment and activities. Discussions with stakeholders will be one way of highlighting the implications of any management measures to both JNCC and Scottish Government. This will contribute to the development of well-designed and effective management measures.

4. Protected features and conservation objectives

The Braemar Pockmarks SAC contains the Annex I habitat "Submarine structures made by leaking gases".

Conservation objectives set out the desired quality of the protected features within each MPA. The conservation objective for the Braemar Pockmarks SAC is to restore the Annex I habitat Submarine structures made by leaking gases to 'Favourable Condition', such that:

- the natural environmental quality is restored;
- the natural environmental processes are maintained;
- the extent, physical structure, diversity, community structure and typical species representative of the submarine structures made by leaking gases in the Northern North Sea are restored.

5. Overview of activities

Table 2 below lists fishing activities which take place within or close to the Braemar Pockmarks SAC. As information on fishing activity from the smaller than 15m fleet is not readily available for this area, initial lists do not consider these vessels activity. However, it is considered unlikely that vessels smaller than 15m operate in the Braemar Pockmarks site. We are keen to validate our assumptions through discussions with stakeholders. Further discussions with those who use the area will improve our understanding of these activities (distribution and intensity etc). Those fishing activities which the protected features are sensitive to are explored in greater detail in the next section. Fishing activities which the protected features are not thought to be sensitive to (i.e., any connection between the activity and the features is considered to be minimal) will not be considered further within this document. New or other fishing activities not identified within the table would need to be considered on a case-by-case basis.

Table 2. Overview of existing fishing activities believed to take place within or close to the Braemar Pockmarks SAC. *Only the specific examples of activities listed in the table have been excluded, rather than the broad activity types.

Activities considered capable of affecting the protected feature	Activities <i>not</i> considered capable of affecting the protected feature*
<ul style="list-style-type: none"> • Demersal otter trawling • Demersal seine netting • Set netting 	<ul style="list-style-type: none"> • Pelagic trawling and purse seining

6. Development of management options

Management options are being developed where we consider that some form of management may be necessary to achieve the conservation objectives for the feature. The approach to identifying management options for each activity will be risk-based, i.e., we are focusing on providing advice where we believe there is a risk to achieving the conservation objectives. To do this, we are using existing data and information on protected features and relevant activities, and also our understanding of the relationships between the feature and relevant activities. The management options may be informed by discussions with stakeholders. If new information becomes available during discussions, the management options may be revised.

Management options are focused on the activities that cause an effect (a pressure) that the feature is sensitive to. Pressures can be physical (e.g. abrasion of the seabed), chemical or biological. Different activities may cause the same pressure. The protected features of an SAC are considered sensitive to activities that could adversely affect them (because of the associated pressures), especially if they are unable or very slow to recover.

We have identified risks to achieving the conservation objectives where there is an overlap between protected features and activities associated with pressures the features are sensitive to. Our identification of the risk has been refined using guidance on the interaction between the features and activities where such guidance is available. We have recommended management options to manage this risk. Specific details of the recommended management options for each activity are provided in the following sections. Overlap between different activities/ and the proposed protected features is described and where appropriate mapped. The text focuses on interactions in terms of physical overlap but the assessment of risk in future should also take account of the intensity and frequency of activities within the SAC.

JNCC has identified a range of management option categories that may be applied, including:

- no additional management required;
- management to reduce pressures;
- management to remove pressures.

We recognise that stakeholders can provide local environmental knowledge and more detailed information on activities, including distribution and intensity of effort, frequency of activity, and fishing methods employed. This additional information will help us to develop more specific management options, focussed on interactions between features and activities.

Management options have been considered by fishing activity to include the following:

- Mobile bottom contact gear
 - Demersal Otter trawling
 - Demersal seine netting

- Static gear
 - Set netting

JNCC has evaluated management options to support achievement of the conservation objective for Braemar Pockmarks SAC. A gradient of management options has been considered to reduce the feature exposure to pressures. These have been described under three potential management option categories.

a) No additional management

b) Additional management to reduce pressures – where fisheries managers may wish to consider a range of measures that could be used to reduce the risk to features by managing fishing activity. These could include:

- Area restrictions (permanently closing some or all of the feature's area – note this option may be limited due to recent evidence on distribution of the feature).
- Gear restrictions (e.g. restricting use of the more damaging gears).

Ideally, any measures would generally apply only to the part of the site where the feature is present. However, there may be some circumstances in which it could be desirable to extend management measures beyond the known area of feature distribution, for example, where conditions are suitable for a feature to exist but there are insufficient data to confirm its presence.

c) Additional management to remove pressures – where fishing activities known to adversely affect the feature would be excluded. Such exclusion would generally apply only to the part of the site where the feature is present, although it may occasionally be necessary to apply them to a wider area.

The following is a summary of the fishing activity associated with the Braemar Pockmarks site. JNCC have used all available data to evaluate the extent of fishing activities within the site. Where possible, data has been presented in accompanying maps. The majority of the information is derived from VMS data, either aggregated into effort grids (0.05 x 0.05 decimal degrees) over four years (2006-2009), in raw "ping" format, indicating the presence of UK vessels over five years (2007-2011) or non UK vessels over three years (2009-2012). We also present UK landings statistics over the same time period. To ensure anonymity of the data source, discrete VMS ping data is only presented in instances where it is not considered disclosive to do so (i.e., multiple vessels operating in the same area). VMS data for UK vessels were linked to logbook information in order to determine the fishing gears being employed. For non-UK registered vessels, where logbook information was not available, information on fishing gear was obtained from 'primary gear' listed on the EU vessel register. Unprocessed VMS data were filtered using a simple speed rule of between 1 and 6 knots to indicate fishing activity for all gear types.

6.1 Fishing activity: Mobile bottom contact gear

6.1.1 Otter trawling

The greater Fladen Ground region is an area of major importance to the Scottish demersal fleet and the Braemar Pockmark SAC lies to the east of this area. Effort greater than 1000 hours (per grid) over a four year period is typical for much of the Fladen Ground area, however effort in the region overlapping the Braemar Pockmark site is typically lower (effort ranges from 245- 483 hrs across the site between 2006 to 2009; Figure 3). There does not appear to be a clear pattern in the distribution of activity across the site as a whole. The majority of landings from UK vessels fishing in ICES rectangle 46F1 land into Peterhead and Fraserburgh, although with landings also recorded for other northeast Scottish ports. The *Nephrops* fishery in the area was the highest value over the period 2006-2011, although with significant whitefish landings also recorded.

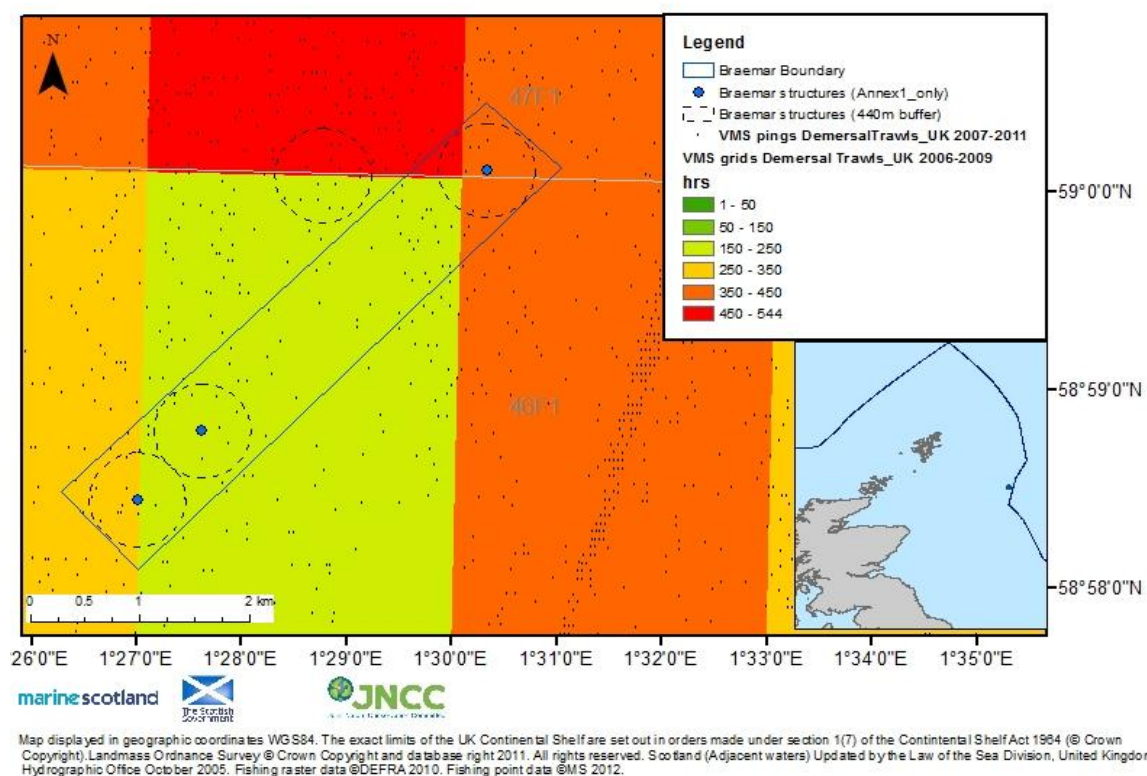
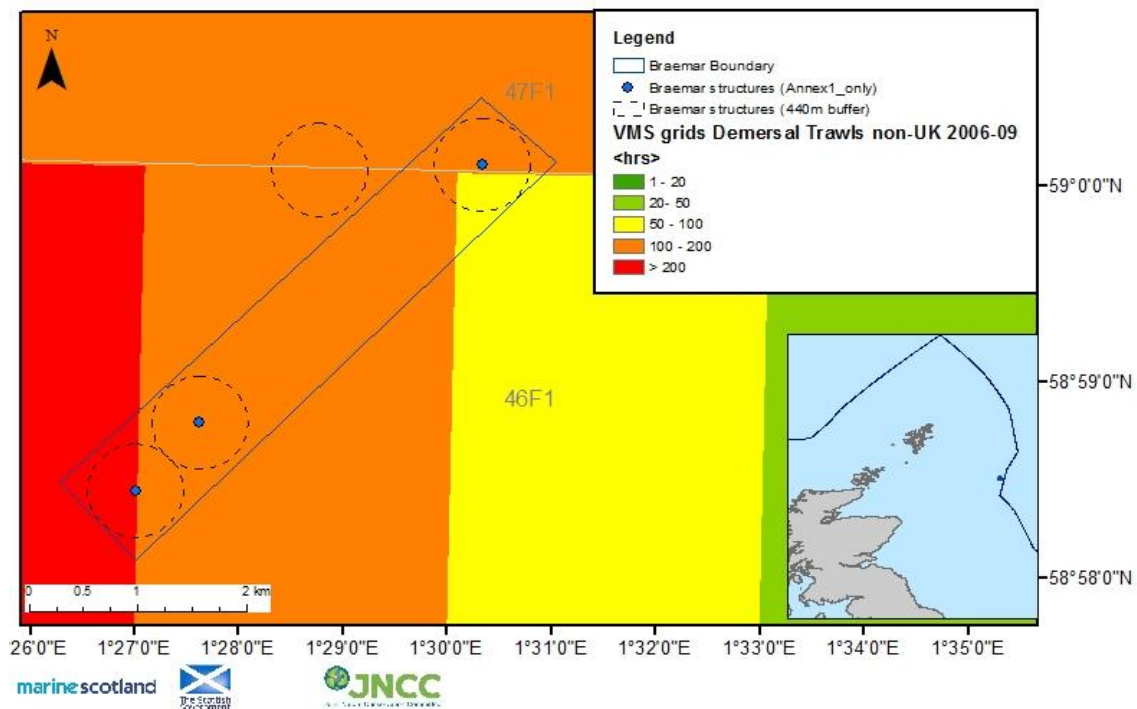


Figure 3. UK demersal trawl activity overlapping the Braemar Pockmark site 2006-2011.



Map displayed in geographic coordinates WGS84. The exact limits of the UK Continental Shelf are set out in orders made under section 1(7) of the Continental Shelf Act 1964 (© Crown Copyright), Landmass Ordnance Survey © Crown Copyright and database right 2011. All rights reserved. Scotland (Adjacent waters) Updated by the Law of the Sea Division, United Kingdom Hydrographic Office October 2006. Fishing raster data ©DEFRA 2010. Fishing point data ©MMS 2012.

Figure 4. Non-UK demersal trawl activity overlapping the Braemar Pockmark site 2006-2009. Due to the small number of vessels operating in the area 2009-2012, it was not considered appropriate to publish VMS ping data in the current map.

Non-UK demersal fishing overlapping the Braemar Pockmark SCI (maximum effort 203 hrs effort in any grid during 2006 to 2009; Figure 4) is primarily from the Danish trawl fleet. The ping data (2009-2012) suggests that there has been a reduction in effort over the last number of years.

6.1.2 Seine Netting

The seine net fishery in the Braemar Pockmark area is very low intensity (less than 7hrs effort over 4 years 2006-2009). It is likely that the fishery in this area is typical of seine net activity across the northern North Sea, i.e., a mixed demersal fishery that predominantly targets whitefish (haddock, cod and whiting), but with significant landings of monkfish and several flat fish species (Figure 5).

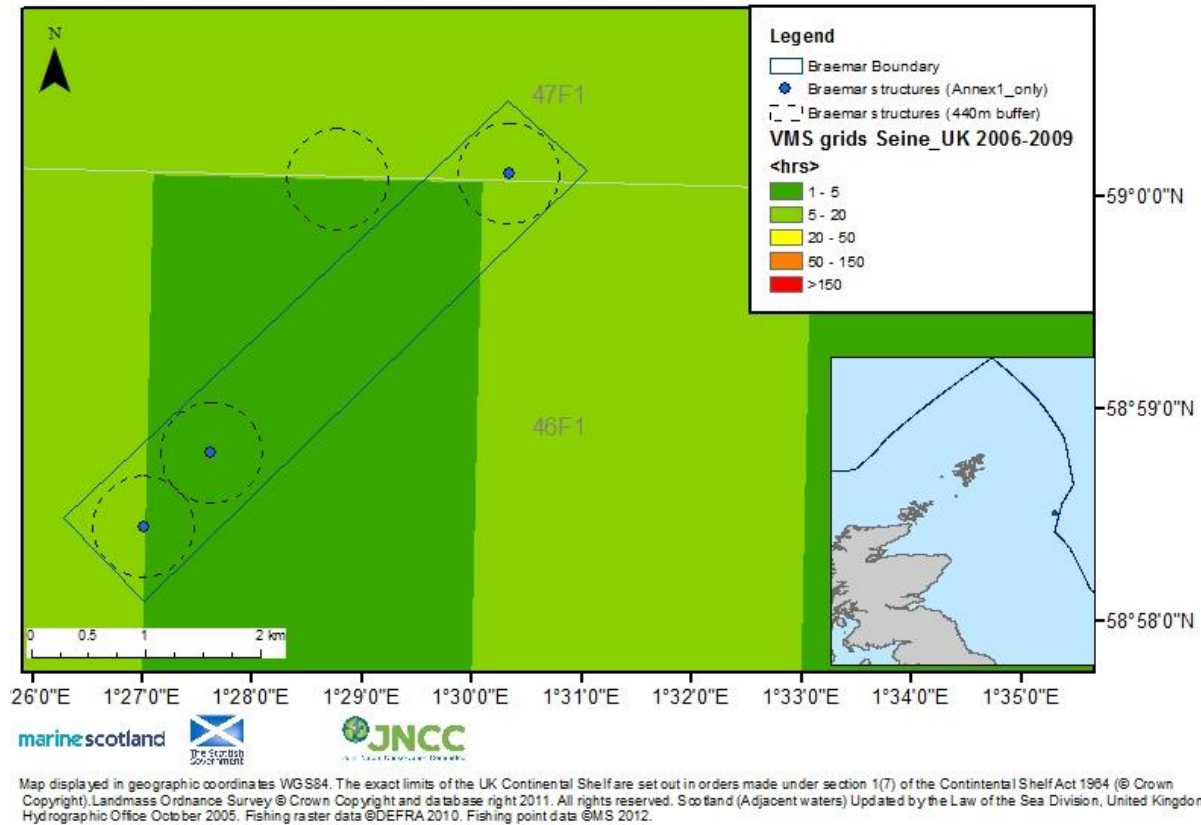


Figure 5. Scottish seine net activity overlapping the Braemar Pockmark site 2006-2009. Due to the small number of vessels operating in the area, it was not considered appropriate to publish VMS ping data in the current map.

6.1.3 Set Netting

There was evidence of low intensity over-15m Danish set netting overlapping the Braemar Pockmarks SCI between 2006 and 2009 (maximum effort of 30 hours in a single grid over four years; Figure 6); however, there has not been any evidence of activity since 2009. In addition, it is unclear whether the activity recorded was real or was due to a gear class misidentification from the EU vessel register. As a result, discussion with stakeholders will be required to validate the data.

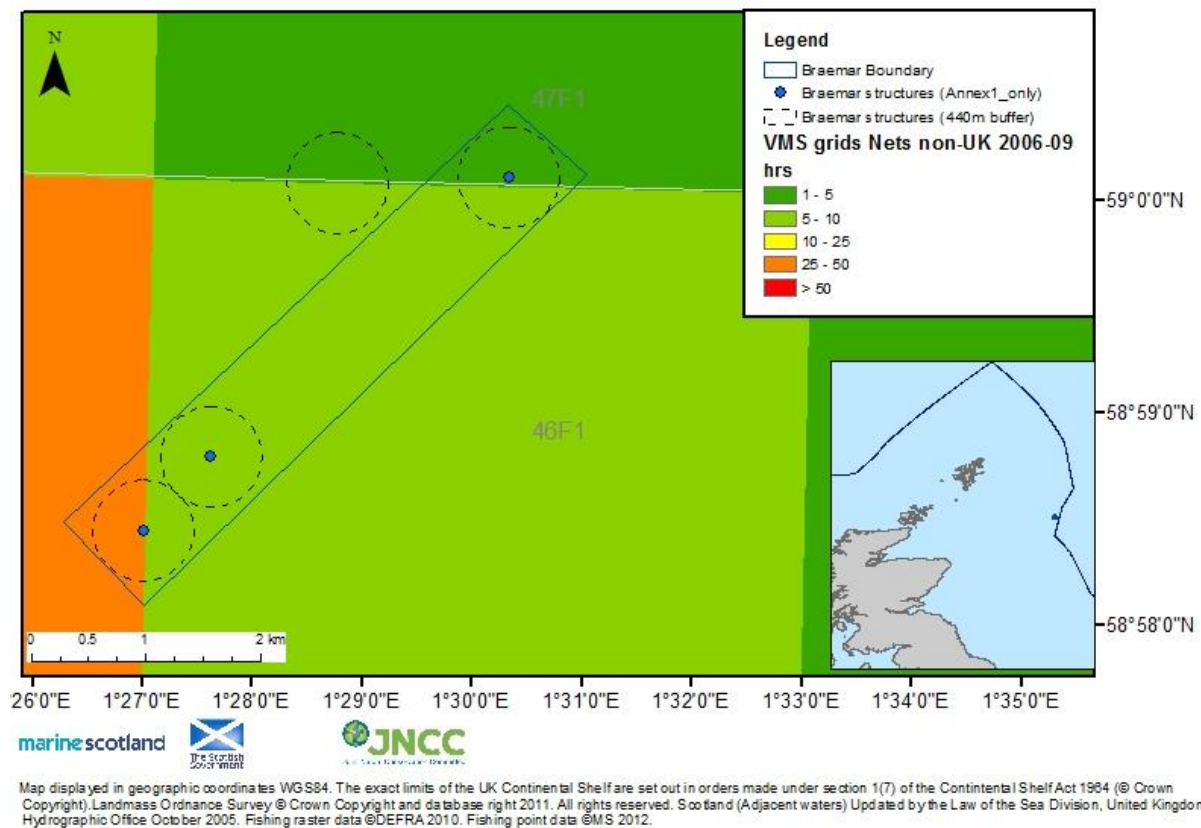


Figure 6. Non-UK Netting activity overlapping the Braemar Pockmark site 2006-2009. No VMS ping data exists for 2009-2012.

7. Management Options

Table 3. Fisheries management options for otter trawling, demersal seine and set netting.

Fishing Activity	Management Options
<p>Otter trawling</p> <p>Demersal seine netting</p>	<p>No additional management: There is a significant risk of not achieving the conservation objectives for the submarine structures made by leaking gases.</p> <p>Reduce/limit pressures: This option would reduce, but not entirely eliminate, the risk of degradation to the submarine structures made by leaking gases feature as a result of direct impact from fishing activities. Appropriate management could include closure of the known extent of the feature within the site. However, a risk of impact with patches of feature not identified during survey would remain. Recent survey evidence suggests that patches of feature extend across the site beyond those listed in the original submission thus the risk of damage to the feature from fishing activity within the site is high. Although the risk of damage to the feature is likely to be highest for heavy gear components restrictions may be appropriate for all bottom contact gears to minimise the risk of fragmentation of exposed feature. The location of areas to be covered by management restrictions would include a 3:1 fishing warp to depth length ratio to reduce any risk of accidental contact with the feature. The location of areas to be covered by management restrictions would be decided in consultation with fishers.</p> <p>Remove/avoid pressures: This option would reduce the risk of degradation to any submarine structures made by leaking gases feature within the site boundary to the lowest possible levels. Restrictions would be required for all bottom contact gears within the full extent of the site boundary. The boundary already includes a buffer zone equal to three times the water depth around the known features to reduce any risk of accidental contact with the feature.</p>
<p>Set Netting</p>	<p>No additional management: The risk of deterioration of the submarine structures made by leaking gases feature from set netting is considered minimal. This option is considered appropriate for all bottom contacting static gear. However, if static gear fishing were to increase and monitoring showed evidence of detrimental effects, it may be necessary to apply restrictions in the future.</p>

8. Conclusions and further recommendations

The development of measures for the Braemar Pockmark site will be done through discussion with stakeholders. Discussions will focus on our understanding of the features and the likely risks to the designated features of interactions with fishing activities. Based on the options presented here, it is hoped that a preferred set of management options will be recommended.

9. Further information

The following documents about the Braemar pockmarks SAC are available:

[Braemar Pockmarks SAC Selection assessment \(Version 5.4, 2018\)](#)

[Braemar Pockmarks Conservation Objectives and Advice on Operations \(Versions 1.0, 2018\)](#)

10. References

DEFRA. 2004. Review of Marine Nature Conservation. *Working Group Report to Government* [online]. London: Defra. Available from: <http://www.defra.gov.uk/marine/pdf/biodiversity/rmnc-report-0704.pdf> [Accessed May 2013].

Hartley, J.P. 2005. Seabed Investigations of Pockmark Features in UKCS Block 16/3. *Report to Joint Nature Conservation Committee*. Aberdeenshire: Hartley Anderson Limited.

JNCC. 2004. The Irish Sea Pilot Final Report. *Report to Defra by The Joint Nature Conservation Committee* [online]. Peterborough: JNCC. Available from: <http://www.jncc.gov.uk/page-2767#download> [Accessed May 2013].

JUDD, A.G. 2001. Pockmarks in the UK Sector of the North Sea. *Technical report (TR_002) produced for Strategic Environmental Assessment - SEA2*. UK: Department of Trade and Industry.