# Assessing progress towards an ecologically coherent MPA network in Secretary of State Waters in 2016:

# Results

Hannah Carr, Alice Cornthwaite,
Hugh Wright and Jon Davies

Joint Nature Conservation Committee

2016

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## Executive Summary

Following on from the previous two assessments of the MPA network in Secretary of State (SoS) waters[1,2], Defra asked JNCC for a further third analysis of progress up to spring 2016. Defra requested that the assessment considers both the existing MPA network and consider a future scenario with the network containing potential options which could be designated in a third tranche of Marine Conservation Zones (MCZs). This second element would help Defra visualise any shortfalls that might need to be addressed by further designation work. Defra requested the analysis should take biogeographic factors into account, using the Charting Progress 2 (CP2) regions.

JNCC processed the available data to draw conclusions with Natural England reviewing the results to validate these conclusions for inshore sites. This present paper sets out the results and findings from the assessment. The approach and methodology used for the assessment, including its limitations are set out in a separate report published alongside this present report.

JNCC concluded the existing network makes a significant contribution towards meeting the policy objective for an ecologically coherent network in UK waters. At the whole SoS waters scale, all broadscale habitat features are represented and replicated. However, at the biogeographic region scale, some shortfalls remain particularly for the protection of broadscale sediment habitats in the Channel and Irish Sea regions; and Features of Conservation Interest (FOCI) in all regions. When potential site options that could be designated in a third tranche of MCZs are considered alongside the existing network, many shortfalls are removed generally leaving only a few gaps for broadscale habitats against the network criterion adequacy. There would still be some shortfalls for FOCI although many cannot be addressed within SoS waters based on currently available data.

Some gaps remain in the existing MPA network in SoS waters. These gaps could be addressed through a combination of adding additional features to existing MCZs, designating some of the remaining recommended MCZs from the Regional MCZ Projects, and identifying a small number of new site options. JNCC recommend Defra pursue these three options to complete the MPA network against the ENG criteria for Secretary of State waters.

JNCC recommend Defra continue to follow a biogeographic approach to MPA network implementation to build resilience into the overall network in UK waters. Noting the designation of MCZs must consider socio-economic factors, the network should still aim to meet the minimum targets recommended in the ENG in line with JNCC's recent advice whilst balancing socio-economic constraints. Meeting the ENG targets would enable SoS waters to make a full contribution to an ecologically coherent network whilst offering greater resilience in biodiversity conservation.

JNCC note that the principles set out in OSPAR MPA network guidance includes Features, Representativity, Resilience, Connectivity **and** Management. OSPAR Contracting Parties agreed to establish a 'well-managed network' of MPAs. JNCC's assessment in 2016 has not considered whether the existing MPAs in SoS waters have sufficient management in place

[1] Identifying the remaining MCZ site options that would fill big gaps in the existing MPA network around England and offshore waters of Wales & Northern Ireland. Available at: http://jncc.defra.gov.uk/page-6658

[2] Assessing progress towards an ecologically coherent MPA network in Secretary of State Waters in 2014, JNCC, November 2014. Available at: http://jncc.defra.gov.uk/pdf/JNCC_NetworkProgressInSoSWaters_2014.pdf

to deliver their conservation objectives. It is imperative that MPAs are managed to ensure their features are effectively protected and therefore contribute to the functioning of an ecologically coherent network. Appropriate management of human activity needs to be implemented if the target for an ‘ecologically coherent network of well-managed MPAs’ is to be achieved.

# Contents

# 1 Background

The UK Government and Devolved Administrations committed to creating an ecologically coherent network of Marine Protected Areas (MPAs) in UK waters and, in 2012, published a statement on the expected UK contribution to an ecologically coherent MPA network in the north-east Atlantic[3]. UK MPAs will create this UK network and contribute to wider European and global initiatives. The key international obligations come from the Oslo/Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) and the Aichi Targets under the Convention on Biological Diversity.

Following on from the previous two assessments of the MPA in Secretary of State (SoS) waters[4,5], Defra asked JNCC for a further third analysis of progress up to spring 2016. Defra requested that the assessment considers both the existing MPA network and consider a future scenario with the network containing potential options which could be designated in the third tranche of Marine Conservation Zones (MCZs). This second element would help Defra visualise any shortfalls that might need to be addressed by further designation work. Defra requested the analysis should take biogeographic factors into account, using the Charting Progress 2 (CP2) regions.

JNCC processed the available data to draw conclusions with Natural England reviewing the results to validate these conclusions for inshore sites. This present paper sets out the results and findings from the assessment. The approach and methodology used for the assessment, including its limitations are set out in a separate report published alongside this present report.

# 2 Methodology

JNCC adopted a two stage approach to the assessment:

1. Identify what features are currently protected within the existing MPA network in SoS waters and how they compare with the MPA network criteria to identify any shortfalls; and,
2. Analyse the existing MPA network plus potential site options for a third tranche of MCZs against the same network criteria to identify any remaining shortfalls.

Any shortfalls were only identified for features on the MCZ features list deemed suitable for MPAs, using the recommended criteria for ecological coherence at the Charting Progress 2 (CP2) biogeographic region level. JNCC used criteria based on the principles for achieving an ecologically coherent MPA network recommended by the OSPAR Commission and adopted by the UK; JNCC developed specific targets tailored for SoS waters based on previous MPA network assessments and the MCZ Ecological Network Guidance (ENG). This analysis included best available data for existing MPAs within the five CP2 regions that overlap with SoS waters: Northern North Sea, Southern North Sea, Eastern Channel, Western Channel and Celtic Sea, and Irish Sea. For the purposes of this study the extent of SoS waters was not considered to include the waters offshore of Wales as responsibility for nature conservation for this area are likely to be transferring to Welsh Government in the near future. Note that site options included in this assessment were determined by Defra,

[3] Joint Administrations Statement. 2012. UK Contribution to Ecologically Coherent MPA Network in the North East Atlantic. Available at: http://www.scotland.gov.uk/Resource/0041/00411304.pdf
[4] Identifying the remaining MCZ site options that would fill big gaps in the existing MPA network around England and offshore waters of Wales & Northern Ireland. Available at: http://jncc.defra.gov.uk/page-6658
[5] Assessing progress towards an ecologically coherent MPA network in Secretary of State Waters in 2014, JNCC, November 2014. Available at: http://jncc.defra.gov.uk/pdf/JNCC_NetworkProgressInSoSWaters_2014.pdf

JNCC and Natural England. These options were selected to inform this present assessment only and to better understand their potential contribution to the network. Including these options must not be taken as any confirmation that these sites will go forward for consultation or designation in the future. Defra Ministers will make final decisions on any site options that should progress to public consultation and potential designation.

For stage 2 of the assessment, JNCC and Natural England reviewed the potential shortfalls generated by the stage 1 analysis, to determine whether they could be considered a ' 'gap' that Defra could realistically address through future site designation. Any MPA network gaps for BSH and FOCI were reviewed by JNCC and NE against existing data to verify whether they could be practically addressed in Secretary of State Waters. In some cases the analyses suggested representation/replication gaps for a feature at either/both the wider CP2 region scale and in SoS waters scales, yet closer examination revealed that these shortfalls cannot be addressed as:

- There are either no records of the feature or no records above and beyond those already protected in the SoS waters part of the region; or,
- There is limited or no evidence for viable patches/populations that are not already protected by MPA(s).

Section 3 below sets out the key messages from the assessment of the existing MPA network and Section 4 for the current network plus potential MCZ site options. Summary results tables for the assessment against criteria I, II, III, IV and V can be found in tables 2 – 5 in Annex I.

# 3 The current MPA network

The assessment of the current network only considered criteria I, III, IV and V because JNCC's 2014 report[5] presented the connectivity between the MPAs in the network and the distribution of MPAs over different depth bands. No additional sites have been designated since that analysis and therefore the conclusions from 2014 remain unchanged for these criteria.

Any initial shortfalls identified for the existing MPA network were not investigated further against the availability of data to confirm whether the apparent shortfall should be considered a gap. They should only be considered as 'potential gaps' at this level, not least because the stage 2 analysis with the potential site options will effectively investigate all shortfalls. The results in Annex I may show many more gaps than there are in reality.

The headline results for each of the criteria are set out in the following sections.

## 3.1 Representativity

**Criteria I -** Where present each MCZ feature (broad-scale habitats and FOCI) should be represented within the MPA network in each Charting Progress 2 (CP2) biogeographic region [in SoS waters].

**Criteria II -** Where present (and practicable) each broad-scale habitat should be represented in the intertidal, the shallow inshore and deeper shelf areas of each CP2 biogeographic region.

***Broadscale habitats***

- The existing MPA network in SoS waters as a whole protects examples of all 23 broadscale habitat features;
- Where they are known to occur in CP2 regions there are examples of all 23 broadscale habitats protected within MPAs;
- Generally speaking, most habitats are represented in MPAs in both shallow coastal and deeper shelf areas where they occur in all the CP2 regions. Some cases remain where there is a disproportionate representation of some features in the shallower coastal areas with fewer examples being represented in the deeper shelf areas.

***Features of Conservation Importance***

- The existing MPA network in SoS waters as a whole protects 41 examples of 48 Features of Conservation Importance (FOCI) known to occur;
- MPAs in the Northern North Sea CP2 region represent 12 out of the 18 FOCI that are known to exist in the region.
- MPAs in the Southern North Sea CP2 region represent 11 out of the 22 FOCI known to occur.
- MPAs in the Eastern Channel CP2 region represent 20 out of the 34 FOCI known to occur in the region.
- Sites in the Western Channel and Celtic Sea CP2 region represent 32 out of the 42 FOCI occurring in the region.
- The MPAs in the Irish Sea CP2 region represent 16 out of the 32 FOCI known to occur in the region.

## 3.2 Replication

**Criteria III -** At least two viable examples of each broad-scale habitat are protected within the MPA network in each CP2 biogeographic region.

**Criteria IV -** At least three viable examples of each Feature of Conservation Importance (FOCI) are protected within the MPA network in each CP2 biogeographic region.

***Broadscale habitats***

- The existing MPA network in SoS waters as a whole protects at least two replicates of each broadscale habitat;
- There are shortfalls in the replication of some features where they are known to occur in the CP2 regions:
  Deep-sea bed in the Western Channel and Celtic Sea CP2 region; and
  Low energy infralittoral rock and Low energy circalittoral rock in the Irish Sea CP2 region. However, it would not be possible to address the shortfall in Low energy infralittoral rock in the SoS waters part of the Irish Sea region.

***Features of Conservation Importance***

- For SoS waters as a whole, 26 of the 48 FOCI known to occur are sufficiently replicated in existing MPAs;
- At the individual CP2 region level, many FOCI are not replicated in the existing network:
    - Three of the 12 FOCI represented in the Northern North Sea CP2 region are also sufficiently replicated.
    - Three of the 10 FOCI represented in the Southern North Sea CP2 region are also sufficiently replicated.
    - Seven of the 20 FOCI represented in MPAs in the Eastern Channel CP2 region are also sufficiently replicated.
    - Twelve of the 32 FOCI represented in MPAs in the Western Channel and Celtic Sea CP2 region are replicated; and
    - Nine out of the 16 FOCI represented In the Irish Sea CP2 region meet the replication targets.

## 3.3 Adequacy

**Criteria V -** The proportion by area of each broad-scale habitat within MPAs should exceed the minimum OSPAR guideline (10%), and ideally attain the targets set out in the Ecological Network Guidance (ENG) (for 70% of species level) within each CP2 region [in SoS waters].

Progress towards meeting the criteria for adequacy was assessed against the feature specific targets set out in the ENG, noting these targets only apply to the SoS waters part of each CP2 region. JNCC have presented the results against both the 'policy targets' of 10% and 20% (from OSPAR), and the ENG targets, noting that some broadscale habitats do not have ENG targets.

The existing MPAs make a significant contribution to meeting the targets for adequacy across all five CP2 regions that overlap with SoS waters. However, there are shortfalls in the protection of some broadscale habitats within the existing network. Notably for subtidal sediment habitats in the Eastern Channel CP2 region and the SoS waters part of the Western Channel and Celtic Sea and Irish Sea CP2 regions.

For the three CP2 regions that extend beyond SoS waters, there are examples where the protection of broadscale habitats falls below the minimum 10% target in the wider CP2 region, but the (higher) ENG targets have been achieved in the SoS part of the region[6].

# 4 The MPA network with potential future options

The second step was for JNCC to consider the potential contribution of the site options for filling remaining gaps identified in the current MPA network. Site options under consideration by Defra are:

i. Additional features being added to designated MCZs;

[6] There is no requirement outside of SoS waters for other administrations to achieve the targets set out in the ENG and so in the wider CP2 region the target is viewed as a minimum of 10%.

ii. The remaining recommended MCZs from the regional MCZ projects; and
iii. Potential new sites.

Only options i and ii were considered in the second stage of the analysis since new site options to complete the network can only be developed once the remaining gaps in the MPA network are understood. JNCC and Natural England will develop potential new site options to address the any remaining gaps where required. These new site options will be developed through a separate workstream and discussed with stakeholders[7].

The headline results for each of the criteria from the analysis using options i and ii, hereafter called T3 options, are set out in the following sections.

## 4.1 Representativity

**Criteria I -** Where present each MCZ feature (broad-scale habitats and FOCI) should be represented within the MPA network in each Charting Progress 2 (CP2) biogeographic region [in SoS waters].

**Criteria II -** Where present (and practicable) each broad-scale habitat should be represented in the intertidal, the shallow inshore and deeper shelf areas of each CP2 biogeographic region.

***Broadscale habitats***

- When T3 options are considered, all of the 23 broadscale habitat features would be represented in MPAs where they occur in the CP2 regions overlapping SoS waters; and,
- The imbalance between shallow coastal and deeper shelf areas would be improved. All broad-scale habitat features where known to occur in the intertidal, the shallow inshore and deeper shelf areas would be represented in the MPA network.

***Features of Conservation Importance***

- The MPA network in SoS waters would protect 43 examples of 48 Features of Conservation Importance (FOCI) known to occur; and,
- The representation of FOCI increases within four of the CP2 regions. It is not possible to address any of the remaining shortfalls within SoS waters.
    - MPAs in the Northern North Sea CP2 region would represent 12 out of the 18 FOCI that are known to exist in the region. Of the six shortfalls remaining none should be considered a gap that could be addressed in the SoS waters part of the CP2 region (for reasons set out in Section 2);
    - MPAs in the Southern North Sea CP2 region would represent 14 out of the 22 FOCI known to occur. None of the remaining shortfalls can be addressed in the region;
    - MPAs in the Eastern Channel CP2 region would represent 28 out of the 34 FOCI known to occur in the region. None of the remaining shortfalls can be addressed in the region;

[7] 'Identifying potential site options to help complete the Marine Protected Area network in the waters around England', JNCC and Natural England 2016. Available at: http://jncc.defra.gov.uk/page-7119

- Sites in the Western Channel and Celtic Sea CP2 region would represent 33 out of the 42 FOCI occurring in the region. None of the remaining shortfalls could be addressed within the SoS part of the CP2 region; and,
- The MPAs in the Irish Sea CP2 region would represent 17 out of the 32 FOCI known to occur in the region. None of the remaining shortfalls can be addressed in the SoS part of the CP2 region.

## 4.2 Replication

**Criteria III -** At least two viable examples of each broad-scale habitat are protected within the MPA network in each CP2 biogeographic region.

**Criteria IV -** At least three viable examples of each Feature of Conservation Importance (FOCI) are protected within the MPA network in each CP2 biogeographic region.

JNCC and NE reviewed all apparent MPA network shortfalls for both broad-scale habitats and FOCI to verify whether these could be practically addressed in Secretary of State Waters, thereby confirming any gaps. In some cases the initial assessment process had suggested representation/replication shortfalls for a feature at either/both the wider CP2 region scale and in SoS waters scales, yet closer examination revealed that these shortfalls cannot be addressed.

***Broadscale habitats***

- When T3 options are considered the MPA network in SoS waters protects at least two replicates of each broad-scale habitat and so there are no remaining shortfalls against this criteria.

***Features of Conservation Importance***

- Across the five CP2 regions overlapping SoS waters, 34 of the 48 FOCI known to occur would be sufficiently replicated in MPAs;
- At the individual CP2 level, many FOCI would still not be replicated in the network in all five CP2 regions, however only a subset of these shortfalls can be addressed in SoS waters;
    - Four of the 12 FOCI represented in the Northern North Sea CP2 region would be sufficiently replicated. Data indicate that there are no further options for addressing this shortfall and therefore no gaps remain for the replication of FOCI in this region.
    - Seven of the 14 FOCI represented in the Southern North Sea CP2 region would be sufficiently replicated. Available data indicates only two shortfalls could be addressed in this region;
    - Eighteen of the 28 FOCI represented in MPAs in the Eastern Channel CP2 region would be sufficiently replicated. Available data indicate only one shortfall could be addressed in this region;
    - Twenty of the 33 FOCI represented in MPAs in the Western Channel and Celtic Sea CP2 region would be sufficiently replicated. Data indicate that only one of the remaining shortfalls could be addressed; and,

- Ten out of the 16 FOCI that would be represented In the Irish Sea CP2 region would meet the replication targets. No further examples could be found in the SoS waters part of the region to address these shortfalls.

Additional options will be required to address the shortfalls where data are available.

## 4.3 Adequacy

**Criteria V -** The proportion by area of each broad-scale habitat within MPAs should exceed the minimum OSPAR guideline (10%), and ideally attain the targets set out in the Ecological Network Guidance (ENG) (for 70% of species level) within each CP2 region [in SoS waters].

The MPA network together with potential T3 options make a significant contribution to meeting the targets for adequacy and addressing current shortfalls in the existing network across all five CP2 regions that overlap with Secretary of State waters. Nevertheless, subtidal sediment habitats in the Eastern Channel region would not reach the ENG targets, and in particular, the shortfall for Subtidal coarse sediment extends to the Western Channel and Celtic Seas and Irish Sea CP2 regions. A shortfall for Deep-seabed would also remain in the Western Channel and Celtic Sea region[8].

Additional site options will be required to address the shortfalls in adequacy across these regions.

## 4.4 Viability

**Criteria VI -** At least 80% of MCZs for broad-scale habitats should have a minimum diameter of 5 km with the average size being between 10 and 20 km in diameter (or equivalent areas from a polygon shape). Patches of FOCI within MCZs should have a minimum diameter (as set out in the ENG).

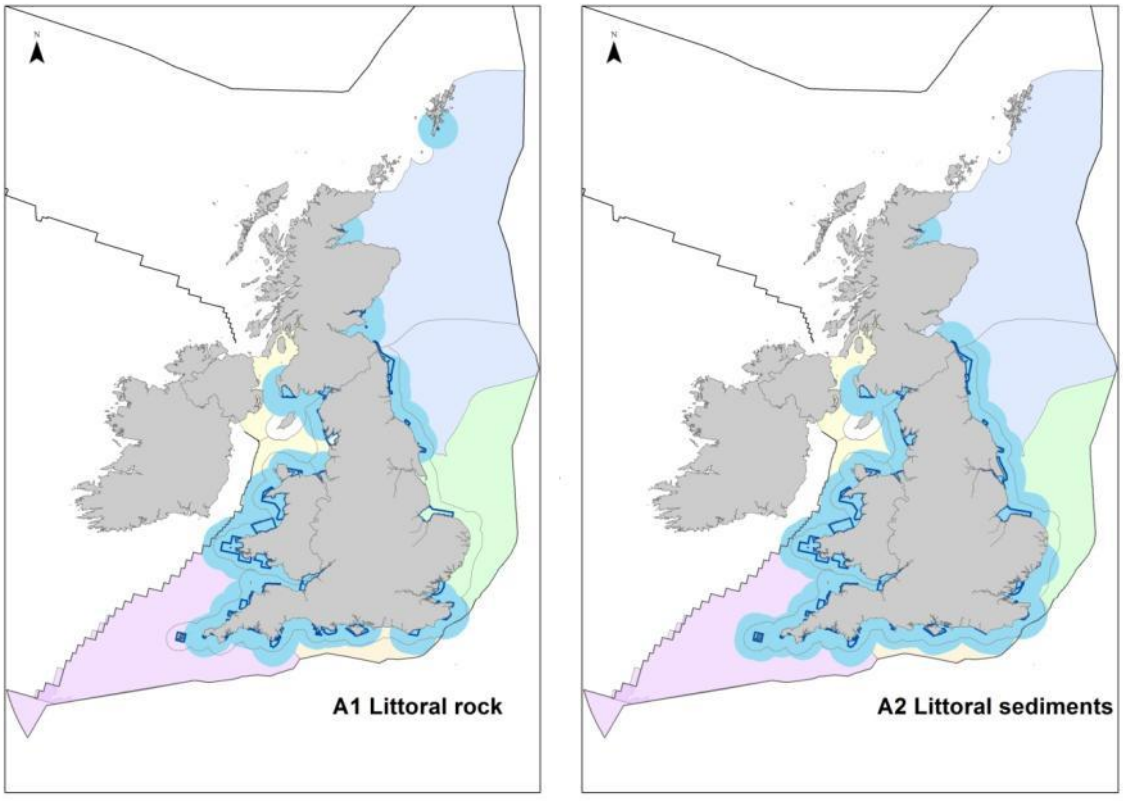
When T3 options are considered alongside the existing MPA network, 68% of the MPAs protecting broadscale habitats have a minimum diameter of 5 km. The average size of sites across all CP2 regions exceeded the average thresholds of 10 to 20km in diameter set out in the ENG. However there is considerable variability due to the vast differences in size between some very small inshore sites and large offshore sites. Although this means that less than 80% of sites meet this criteria, typically sites that fall under the minimum threshold are those with their size limited by their location, for example in estuaries; or where a site focuses on the protection of habitats with limited extent such as intertidal broadscale habitats or fine scale features such as biogenic reefs. JNCC conclude the MPA network would meet the viability criteria taking these latter constraints into account.

[8] An additional area of Deep-sea bed was added to UK waters in the south west *after* the regional MCZ project process, which is one of the reason why adequacy targets have not been achieved for this habitat.

## 4.5 Connectivity

**Criteria VII -** Sites affording protection to the same broad habitat type (equivalent to EUNIS Level 2) should not be further than 80km apart to increase the likelihood that sites with similar features are ecologically connected to each other.

When T3 options are considered alongside the existing MPA network, sites are well connected where features are known to occur, and generally meets the connectivity criteria for all broad habitats. A spatial gap does remain however for *Circalittoral rock* in the inshore area of the Northern North Sea region (see Figure 1). The distribution of rock is largely derived from habitat models that use a 'rock layer' derived from geological surveys. The layer shows rock within 50cm of the surface of the seabed and recent surveys in some areas have failed to record rock habitats exposed at the seabed. The apparent lack of connectivity for rock habitats should be considered uncertain at present until further analyses of the rock layer are completed.



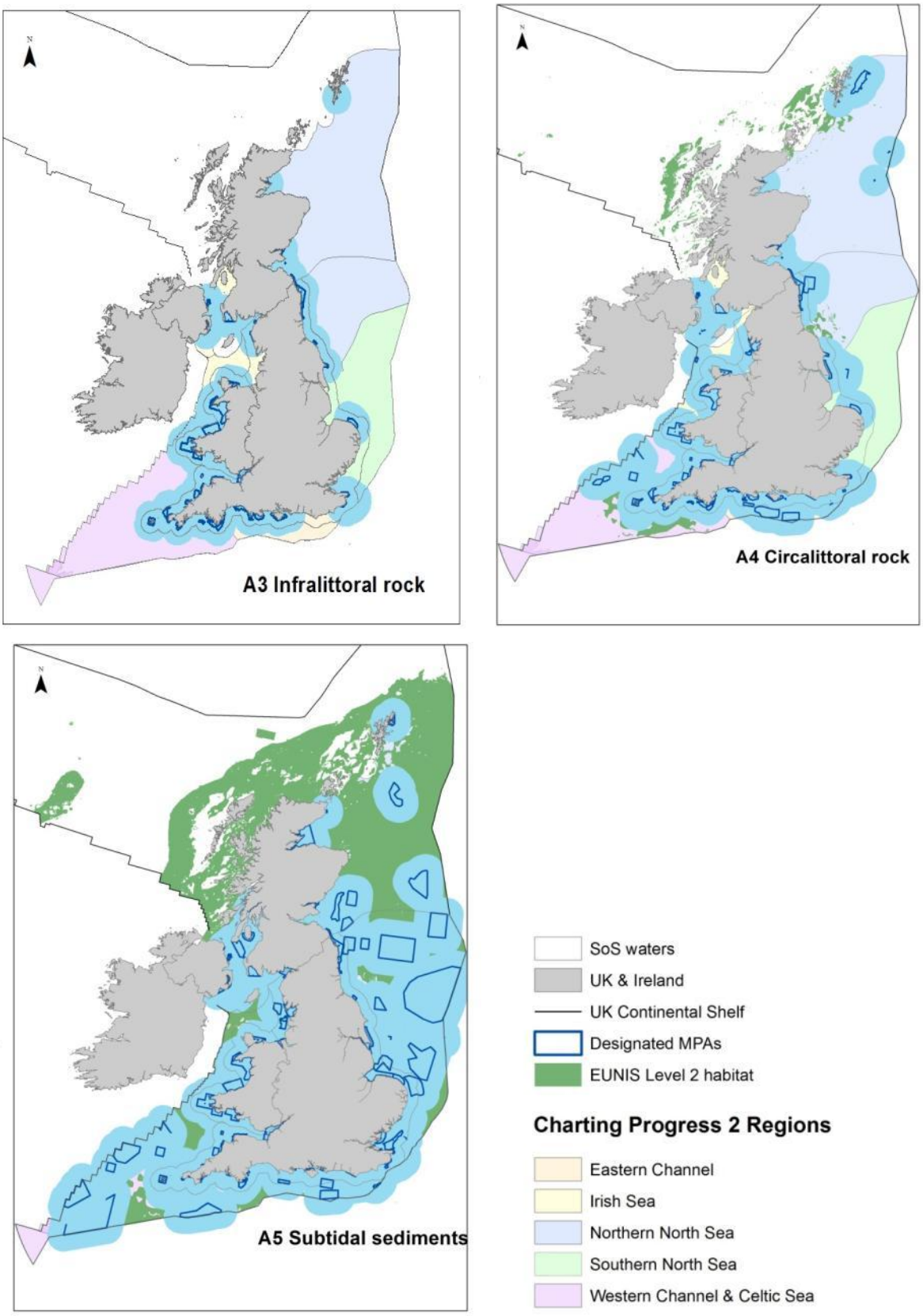



**Figure 1:** Maps indicating the potential connectivity between sites with broadscale habitats aggregated to their parent broad habitat feature (equivalent to EUNIS Level 2) when T3 options are considered alongside existing MPAs.

## 4.6 Distribution of features across depth zones

**Criteria VIII –** Sites should be evenly distributed across different depth zones.

When T3 options are considered alongside the existing MPA network, the sites are generally well distributed across the different depth ranges within SoS waters (see Figure 2). JNCC note there remains a disproportionate amount of the shallow areas in the Northern North Sea, Western Channel and Celtic Sea and Irish Sea CP2 regions in MPAs; deeper regions generally have limited protection (see Table 1).

**Table 1**: Distribution of MPAs, including T3 options, across OSPAR depth zones. Note the area data are presented as proportion of the total area, rounded to a single decimal place that results in some columns not adding up to exactly 100%.

| OSPAR Depth Zones | Northern North Sea | | Southern North Sea | | Eastern Channel | | Irish Sea | | Western Channel & Celtic Seas | |
|---|---|---|---|---|---|---|---|---|---|---|
| | % of each depth band in the CP2 region | % of each depth band in MPAs in the CP2 region | % of each depth band in the CP2 region | % of each depth band in MPAs in the CP2 region | % of each depth band in the CP2 region | % of each depth band in MPAs in the CP2 region | % of each depth band in the CP2 region | % of each depth band in MPAs in the CP2 region | % of each depth band in the CP2 region | % of each depth band in MPAs in the CP2 region |
| **0-10m** | 0.7 | 43.4 | 6.1 | 58.4 | 4.8 | 14.5 | 9.7 | 53.5 | 1.4 | 69.6 |
| **10-75m** | 32.6 | 14.8 | 93.5 | 33.5 | 94.8 | 19.0 | 65.5 | 15.7 | 26.0 | 13.2 |
| **75-200m** | 66.7 | 7.0 | 0.4 | 0.0 | 0.4 | 95.9 | 24.7 | 4.6 | 67.0 | 0.9 |
| **200+m** | <0.1 | 59.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 5.7 | 12.1 |

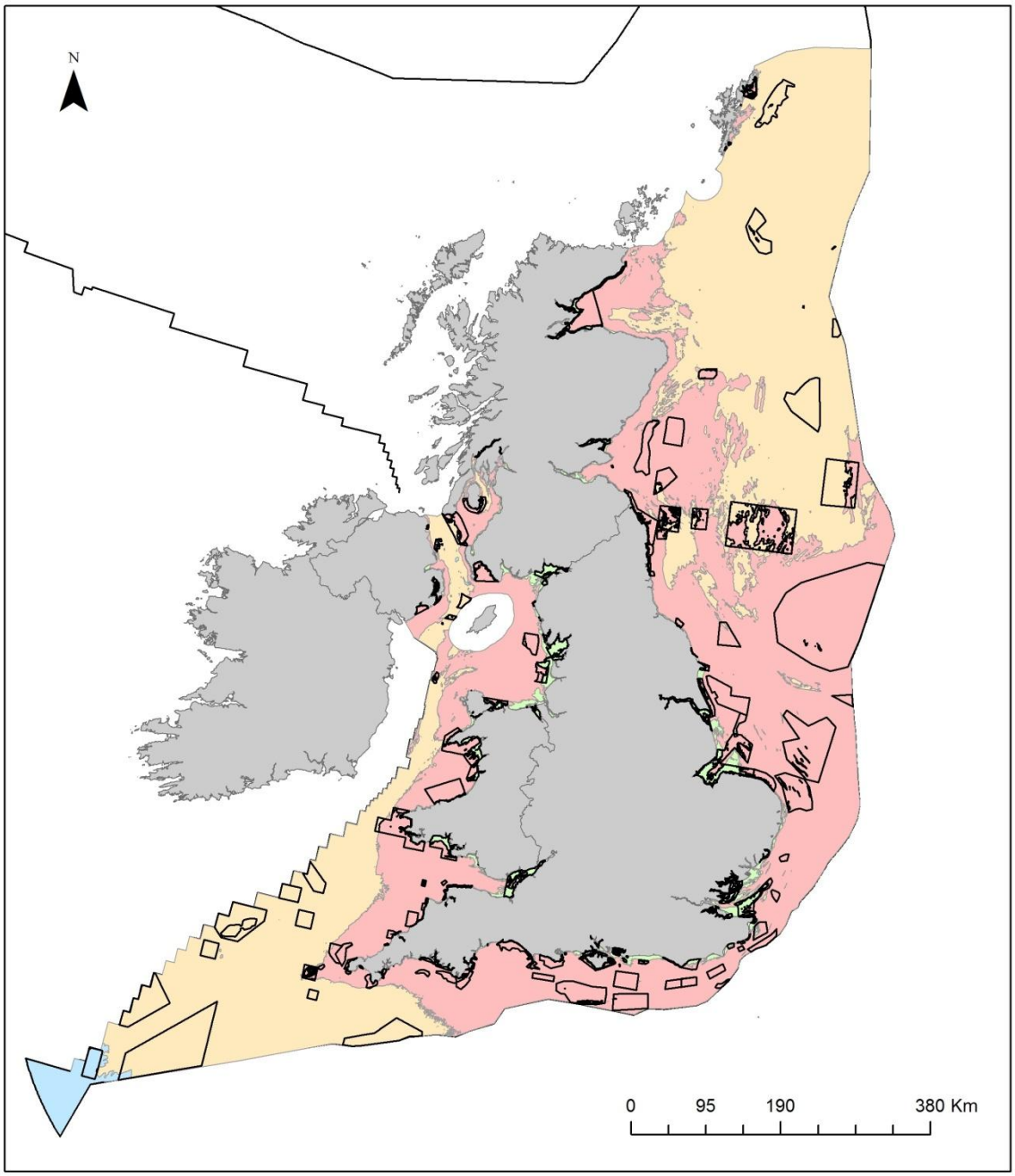





**Figure 2:** The distribution of existing MPAs across a the main Depth zones identified by OSPAR guidance.

# 5 Conclusions

JNCC reviewed progress in establishing a MPA network in Secretary of State (SoS) waters against the network criteria proposed by the OSPAR Commission and set out in the Ecological Network Guidance (ENG). We considered the progress with the existing MPA network and then the potential further contribution that could be made by additional site options if designated in a Third tranche of Marine Conservation Zones (MCZs).

The existing network makes a significant contribution towards meeting the policy objective for an ecologically coherent network in UK waters. At the whole SoS waters scale, all broadscale habitat features are represented and replicated. For Features of Conservation Importance (FOCI), 41 out of 48 are represented in existing sites with 26 sufficiently replicated across SoS waters.

At a biogeographic scale using the Charting Progress 2 (CP2) regions, some shortfalls remain in the existing network, particularly for the protection of broadscale sediment habitats in the Channel regions and the Irish Sea region. There are also shortfalls in the protection of FOCI in all regions.

When potential site options are considered alongside the existing network, many shortfalls are removed, generally leaving only a few gaps for broadscale habitats against the adequacy criterion. There would still be some shortfalls for FOCI although it would not be possible to address most of these gaps within SoS waters based on currently available data. Over 60% of MPAs meet the viability criteria set out in the ENG. Although all existing and potential sites would not have collectively met the 80% target for the viability criterion, there are many sites that are small by the virtue of their location i.e. estuarine. Furthermore, many existing MPAs in the network (other than MCZs) were not subjected to a size criterion for their designation. Sites are generally well connected with only one spatial gap where Circalittoral rock feature is known to exist in the Northern North Sea inshore region. However the is significant uncertainty in the accuracy of the mapped distribution of rocky habitats in this region. Sites are distributed across the main depth zones although there could be some improvement in the representation of deeper areas in three of the CP2 regions.

Some gaps would remain even if the currently available options were designated in a third tranche of MCZs. Additional new site options will be required to complete the network against the ENG criteria for Secretary of State waters.

# 6 Recommendations

JNCC recommend Defra continue to follow a biogeographic approach to MPA network implementation to build resilience into the overall network in UK waters. Noting the designation of MCZs must consider socio-economic factors, the network should still aim to meet the minimum targets recommended in the Ecological Network Guidance in line with JNCC's recent advice whilst balancing socio-economic constraints. Meeting the ENG targets would enable SoS waters to make a full contribution to an ecologically coherent network whilst offering greater resilience in biodiversity conservation.

JNCC noted that even with the inclusion of all T3 options, the current distribution of MPAs within three of the five CP2 regions that overlap with Secretary of State waters will most likely result in some habitats and species in deeper shelf areas not being represented in the network. If additional options are sought to address shortfalls in the overall network, JNCC recommends that priority is assigned to addressing gaps in these deeper shelf areas to ensure the network is adequately representing the full range of habitats and species.

Additional site options should be sought to address the remaining gaps in the MPA network in SoS waters. These gaps could be addressed through a combination of adding additional features to existing MCZs, designating some of the remaining recommended MCZs from the Regional MCZ Projects, and identifying a small number of new site options. JNCC recommend Defra pursue these three options to complete the MPA network against the ENG criteria for Secretary of State waters.

JNCC note that the principles set out in OSPAR MPA network guidance includes Features, Representativity, Resilience, Connectivity **and** Management. OSPAR Contracting Parties agreed to establish a 'well-managed network' of MPAs. JNCC's assessment in 2016 has not considered whether the existing MPAs in SoS waters have sufficient management in place to deliver their conservation objectives. It is imperative that MPAs are managed to ensure their features are effectively protected and therefore contribute to the functioning of an ecologically coherent network. Appropriate management of human activity needs to be implemented if the target for an 'ecologically coherent network of well-managed MPAs' is to be achieved.

# Annex 1: Overview of results

### *Broad-scale habitats*

Broad-scale habitats were assessed against the criteria for representativity, replication and adequacy. To identify any 'gaps', JNCC assumed that each broad-scale habitat should be represented within Defra Secretary of State (SoS) waters and replicated in at least two sites within those Charting Progress 2 (CP2) regions solely within SoS waters. For those CP2 regions shared with other countries, JNCC assumed that Defra would consider further protection of features if closing a replication gap at the CP2 region level was possible or wholly dependent on SoS waters (where all known records of a feature outside of existing MPAs occur in SoS waters of that CP2 region). These latter cases were considered 'potential' gaps. JNCC also assumed a gap would exist if each broad-scale habitat was not adequately protected in proportion to its known distribution in SoS waters within the wider CP2 region. 'Potential' gaps were highlighted where an adequacy target had been achieved in SoS waters but further contributions could be made to help fill an adequacy gap that remains in the wider CP2 region.

Progress towards meeting the criteria for adequacy was assessed against the feature specific targets set out in the Ecological Network Guidance (ENG), noting these targets only apply to the SoS waters part of each CP2 region. JNCC have presented the results against both the 'policy targets' of 10% and 20% (from OSPAR guidance), and the ENG targets, noting that some broadscale habitats do not have a target because insufficient data were available when the ENG was published.

Note: A detailed review of shortfalls was only undertaken for stage 2 of the assessment when potential T3 options were included. Whilst there may appear to be many 'gaps' in the existing network after Stage 1, these were not reviewed to the same degree to determine options that could close the gap.

**Table A1**. Remaining Broad-scale habitats gaps in (a) Northern North Sea; (b) Southern North Sea; (c) Eastern Channel; (d) Western Channel and Celtic Sea; and (e) Irish Sea CP2 regions in both the existing current MPA network and the MPA network considering potential T3 options. Y = confirmed gap; N = not a confirmed gap.

| | **The current MPA network** | | | | | **The MPA network including potential T3 options** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Broad-scale habitats** | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| High energy intertidal rock | N | N | N | N | N | N | N | N | N | N |
| Moderate energy intertidal rock | N | N | N | N | N | N | N | N | N | N |
| Low energy intertidal rock | N | N | N | N | N | N | N | N | N | N |
| Intertidal coarse sediments | N | N | Y | Y | N | N | N | N | N | N |
| Intertidal sand and muddy sand | N | N | N | N | N | N | N | N | N | N |
| Intertidal mud | N | N | N | N | N | N | N | N | N | N |
| Intertidal mixed sediments | N | N | N | N | N | N | N | N | N | N |
| Coastal saltmarshes and saline reedbeds | N | N | N | N | N | N | N | N | N | N |
| Intertidal sediments dominated by aquatic angiosperms | N | N | N | N | N | N | N | N | N | N |
| Intertidal biogenic reefs | N | N | N | N | N | N | N | N | N | N |
| High energy infralittoral rock | Y | N | N | N | N | N | N | N | N | N |
| Moderate energy infralittoral rock | N | N | N | N | N | N | N | N | N | N |
| Low energy infralittoral rock | N | N | Y | N | N | N | N | N | N | N |
| High energy circalittoral rock | Y | N | N | N | N | N | N | N | N | N |
| Moderate energy circalittoral rock | N | N | N | N | Y | N | N | N | N | N |

| | The current MPA network | | | | | The MPA network including potential T3 options | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Broad-scale habitats** | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| Low energy circalittoral rock | Y | N | N | Y | Y | N | N | N | N | N |
| Subtidal coarse sediment | N | N | Y | Y | Y | N | N | Y | Y | Y |
| Subtidal sand | N | N | Y | Y | N | N | N | Y | N | N |
| Subtidal mud | N | N | Y | N | Y | N | N | Y | N | N |
| Subtidal mixed sediments | N | N | Y | N | N | N | N | Y | N | N |
| Subtidal macrophyte-dominated sediment | N | Y | N | N | N | N | N | N | N | N |
| Subtidal biogenic reef | N | N | Y | N | N | N | N | N | N | N |
| Deep-sea bed | N | N | N | Y | N | N | N | N | Y | N |

### *Features of Conservation Importance*

Habitats and species Features of Conservation Importance (FOCI) were assessed against the criteria for representativity and replication at the CP2 region scale. Shortfalls were only flagged if there was a gap at the CP2 region level. JNCC did also report where there is no protection of a FOCI by MPAs in Defra Secretary of State (SoS) waters, even if targets were met at the wider CP2 region. This aspect is particularly important for those features on the ENG specific to English waters (but known to occur in other parts of the UK). JNCC assumed Defra would seek to represent each of these features within SoS waters, and replicate at least three times within those CP2 regions solely contained within SoS waters. For CP2 regions shared with other countries, Defra had indicated they would consider further protection of features if closing a replication gap at the CP2 region level was possible or wholly dependent on SoS waters (where all known records of a feature outside of existing MPAs occur in SoS waters). These latter cases were considered 'potential' gaps.

Note: A detailed review of shortfalls was only undertaken for stage 2 of the assessment when potential T3 options were included. Whilst there may appear to be many 'gaps' in the existing network after Stage 1, these were not reviewed to the same degree to determine options that could close the gap in SoS waters.

**Table A2**. Remaining gaps for Habitat Features of Conservation Importance in (a) Northern North Sea; (b) Southern North Sea; (c) Eastern Channel; (d) Western Channel and Celtic Sea; and (e) Irish Sea CP2 regions in both the existing current MPA network and the MPA network with potential T3 options. Y = confirmed gap; N = not a confirmed gap.

| | **The current MPA network** | | | | | **The MPA network with potential options** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Habitats Features of Conservation Importance** | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| Blue mussel beds | Y | Y | Y | N | N | N | N | N | N | N |
| Coral gardens | N | N | N | Y | N | N | N | N | N | N |
| Cold-water coral reefs | N | N | N | N | N | N | N | N | N | N |
| Deep-sea sponge aggregations | N | N | N | N | N | N | N | N | N | N |
| Estuarine rocky habitat | Y | Y | Y | N | Y | N | N | N | N | N |
| Fragile sponge and anthozoan communities on subtidal rocky habitats | Y | N | N | N | Y | N | N | N | N | N |
| Honeycomb (Sabellaria | N | N | Y | N | N | N | N | N | N | N |

| | The current MPA network | | | | | The MPA network with potential options | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Habitats Features of Conservation Importance** | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| alveolata) reefs | | | | | | | | | | |
| Intertidal underboulder communities | N | N | N | N | N | N | N | N | N | N |
| Littoral chalk communities | Y | N | N | Y | N | N | N | N | N | N |
| Maerl beds | Y | Y | Y | N | Y | N | N | Y | N | N |
| *Modiolus modiolus* beds | Y | N | N | N | Y | N | N | N | N | N |
| Native oyster beds | N | Y | Y | Y | Y | N | N | N | N | N |
| Peat and clay exposures | Y | N | Y | Y | N | N | N | N | N | N |
| Ross worm (*Sabellaria spinulosa*) reefs | N | N | Y | N | N | N | N | N | N | N |
| Seagrass beds | Y | N | N | N | Y | N | N | N | N | N |
| Sea-pen and burrowing megafauna communities | Y | N | Y | Y | N | N | N | N | N | N |
| Sheltered muddy gravels | Y | Y | Y | Y | Y | N | Y | N | N | N |
| Subtidal chalk | N | Y | N | N | Y | N | N | N | N | N |
| Tide-swept channels | Y | Y | Y | Y | Y | N | N | N | N | N |

**Table A3**. Remaining gaps for Species Features of Conservation Importance in (a) Northern North Sea; (b) Southern North Sea; (c) Eastern Channel; (d) Western Channel and Celtic Sea; and (e) Irish Sea CP2 regions in both the existing current MPA network and the MPA network with potential T3 options. Y = confirmed gap; N = not a confirmed gap.

| | **The current MPA network** | | | | | **The MPA network with potential options** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Species Features of Conservation Importance** | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| Amphipod shrimp (*Gitanopsis bispinosa*) | Y | N | N | Y | N | N | N | N | N | N |
| Common maerl (*Phymatolithon calcareum*) | N | Y | Y | Y | Y | N | N | N | N | N |
| Coral maerl (*Lithothamnion corallioides*) | N | N | N | Y | Y | N | N | N | N | N |
| Couch's goby (*Gobius couchi*) | N | N | Y | Y | Y | N | N | N | N | N |
| Defolin`s lagoon snail (*Caecum armoricum*) | N | N | Y | N | N | N | N | N | N | N |
| Fan mussel (*Atrina fragilis*) | N | N | N | Y | N | N | N | N | N | N |
| Giant goby (*Gobius cobitis*) | N | N | N | Y | N | N | N | N | N | N |
| Gooseneck barnacle (*Pollicipes pollicipes*) | N | N | N | Y | N | N | N | N | N | N |
| Lagoon sand shrimp (*Gammarus insensibilis*) | N | Y | Y | Y | Y | N | N | N | N | N |
| Lagoon sandworm (*Armandia cirrhosa*) | N | N | Y | N | Y | N | N | N | N | N |
| Lagoon sea slug (*Tenellia adspersa*) | N | Y | Y | Y | Y | N | N | N | N | N |
| Long snouted seahorse (*Hippocampus guttulatus*) | N | N | Y | Y | Y | N | N | N | N | N |
| Native oyster (*Ostrea edulis*) | Y | Y | N | Y | Y | N | Y | N | Y | N |

| | The current MPA network | | | | | The MPA network with potential options | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Species Features of Conservation Importance** | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| Ocean quahog (*Arctica islandica*) | N | Y | Y | Y | Y | N | N | N | N | N |
| Peacock's tail (*Padina pavonica*) | N | N | Y | Y | N | N | N | N | N | N |
| Pink sea-fan (*Eunicella verrucosa*) | N | Y | N | N | Y | N | N | N | N | N |
| Red seaweed (*Cruoria cruoriaeformis*) | N | N | N | Y | N | N | N | N | N | N |
| Red seaweed (*Grateloupia montagnei*) | N | N | N | Y | Y | N | N | N | N | N |
| Sea-fan anemone (*Amphianthus dohrnii*) | N | Y | Y | N | Y | N | N | N | N | N |
| Short snouted seahorse (*Hippocampus hippocampus*) | N | N | Y | Y | N | N | N | N | N | N |
| Smelt (*Osmerus eperlanus*) | Y | Y | N | Y | Y | N | N | N | N | N |
| Spiny lobster (*Palinurus elephas*) | Y | N | Y | N | Y | N | N | N | N | N |
| Stalked jellyfish (*Haliclystus species*) | Y | Y | Y | N | Y | N | N | N | N | N |
| Stalked jellyfish (*Lucernariopsis campanulata*) | N | N | Y | Y | Y | N | N | N | N | N |
| Stalked jellyfish (*Lucernariopsis cruxmelitensis*) | N | Y | N | Y | Y | N | N | N | N | N |
| Starlet sea anemone (*Nematostella vectensis*) | N | N | Y | N | N | N | N | N | N | N |
| Sunset cup coral (*Leptopsammia pruvoti*) | N | N | N | N | N | N | N | N | N | N |
| Tentacled lagoon-worm (*Alkmaria romijni*) | N | Y | Y | Y | N | N | N | N | N | N |

| | The current MPA network | | | | | The MPA network with potential options | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Species Features of Conservation Importance** | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| Trembling sea mat (*Victorella pavida*) | N | N | N | Y | N | N | N | N | N | N |
| Undulate ray (*Raja undulata*) | N | Y | Y | Y | Y | N | N | N | N | N |

## Document Version Control

| Version | Created by | Changes made | Issued to | Date |
|---|---|---|---|---|
| 2.0 (Final) | Jon Davies | Final QA check | Defra/JNCC website | 2/11/2016 |
| 1.1 | Hannah Carr | Minor edits in response to comments from the JNCC MPA Sub-Group and Defra. | Jon Davies | 01/11/2016 |
| 1.0 | Jon Davies | Accepted all changes | MPA Sub Grp | 20/10/16 |
| 0.5 | Jon Davies | QA Review & edits to v0.4 | | 19/10/16 |
| 0.4 | Hannah Carr | Clean version for review | Jon Davies | 14/10/16 |
| 0.3 | Hannah Carr | Further edits and update to results | n/a | n/a |
| 0.2 | Hannah Carr | Further edits and input of results | n/a | n/a |
| 0.1 | Hannah Carr | Initial draft based on results text extracted from earlier versions of the methods paper. | n/a | n/a |