MCZ Levels of Evidence

Advice on when data supports a feature/site for designation from a scientific, evidence-based perspective

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Written jointly by the Joint Nature Conservation Committee and Natural England

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MCZ Levels of Evidence - Advice on when data supports a feature/site for designation from a scientific, evidence-based perspective

1 Purpose

The purpose of this paper is to set out an approach for providing Defra with advice on the interpretation of evidence and data certainty assessments. The process will enable the Joint Nature Conservation Committee (JNCC) and Natural England (NE) to provide advice as to whether a feature or site has enough scientific evidence to support the designation of a Marine Conservation Zone (MCZ). It follows on from the paper published in May 2011 on the 'Levels of Evidence required for the identification, designation and management of Marine Conservation Zones'[1]. The current paper has been developed following consideration of the selection process for MCZs that were designated in 2013 (hereafter referred to as 'Tranche One MCZs') to inform the selection process for the second tranche of MCZs.

2 Background

In 2012, the Joint Nature Conservation Committee (JNCC) and Natural England (NE) submitted joint advice on the four MCZ Regional Projects 127 recommendations for MCZs in the Defra marine area (see Figure 1).

This advice was developed using Technical Protocols[2] which were established to ensure our scientific advice on the recommended MCZs (rMCZs) was transparent and robust. These Protocols were independently reviewed and quality assured to ensure they were fit for purpose. Technical Protocol E was created to act as a guide to assessing the confidence in the presence and extent of features recommended with an MCZ.

Following submission of JNCC's and NE's statutory advice on the 127 rMCZs, Defra used that advice to inform their selection of those sites and features that were suitable for designation in the first tranche of MCZs. Decisions on site suitability were made by Defra based on a balance between the strength of the conservation advantages an MCZ offers relative to the economic and social implications of designation.

[1] MCZ Levels of Evidence: http://jncc.defra.gov.uk/pdf/110506_LevelsOfEvidenceForMCZs.pdf
[2] MCZ Technical Protocols: http://jncc.defra.gov.uk/page-5999

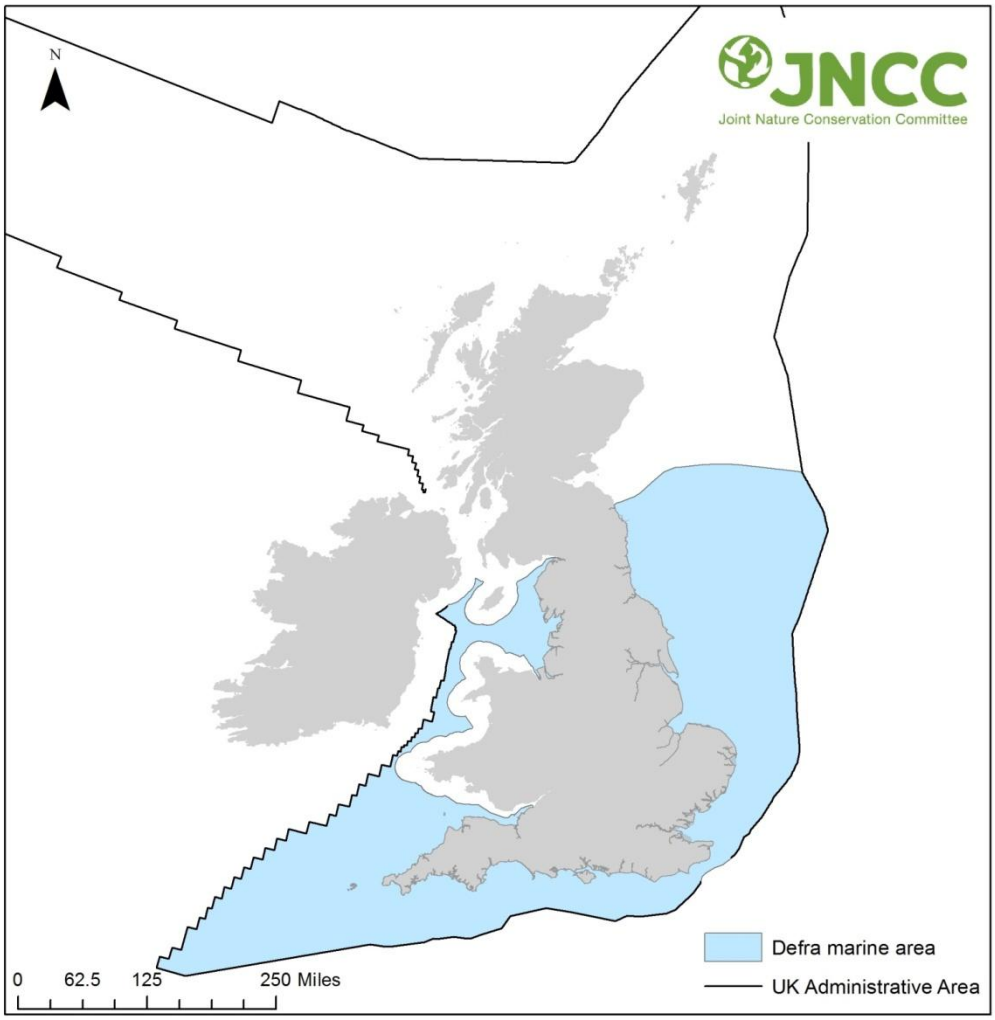

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Figure 1: Defra Marine Area

Whether an MCZ and all of its features were then considered ready for designation in Tranche One was dependent on the degree of confidence in the scientific evidence. To determine whether firstly a feature and then secondly a site had sufficient data for public consultation to be designated in 2013, two questions were asked:

1. Based upon the outputs of JNCC's and NE's application of Technical Protocol E, is there at least Moderate confidence in feature presence and feature extent[3]?
2. Do at least 50% of the features within the rMCZ have at least Moderate confidence in both feature presence and feature extent?

If the answers to Questions 1 and 2 were 'Yes' then Defra considered that the site had acceptable data confidence for inclusion in the consultation on Tranche One sites. If the

[3] Note that in the case of a species, extent refers to spatial distribution

answers to Questions 1 and 2 were 'No' then sites were further considered to establish their risk status. Using the outputs of Technical Protocol G on site risk, two questions were asked:

3. Are the features of the site at risk of damage if the site is not designated, and therefore the site should be considered 'high risk'?
4. If yes, does at least one of the features proposed for designation have acceptable data confidence?

At this point, if the answer to Questions 3 and 4 were 'Yes' then Defra considered the site and its high risk features appropriate for designation. If the answers to Questions 3 and 4 were 'No' then further data would be required to support the designation of this site/feature and it was therefore not included for designation in Tranche One.

This process resulted in 31 rMCZs being included in the public consultation in December 2012 as proposed MCZs (pMCZs) for designation in 2013.

Following the public consultation on the Tranche One pMCZs, JNCC and NE were asked by Defra to provide updated advice on the Tranche One pMCZs to take account of any new evidence gathered through the Defra contracts MB0116[4] and MB0120[5] and data provided through the public consultation. JNCC's and NE's respective advice packages were delivered to Defra in July 2013. A further Protocol (Technical Protocol I) on the certainty in Conservation Objectives and a supplementary paper on the practical application of Technical Protocol E were developed to support the post-consultation advice process. The supplementary paper clarified and updated the principles set out in Technical Protocol E to both reflect the need to consider new features/data that were not previously recommended for the sites, and capture JNCC's and NE's experience of applying the original Protocol. Both Technical Protocol E and supplementary guidance were used by JNCC and NE in 2013 to guide the development of their post-consultation advice on the Tranche One pMCZs.

In July 2013, Defra used JNCC's and NE's advice to help determine which Tranche One pMCZs and features should be designated in 2013. For future MCZ tranches Defra have reconsidered their approach to determine data sufficiency for sites. A revised approach has been developed to consider a range of scientific issues and addresses several challenges identified within the existing questions used to determine data sufficiency:

[4] MB0116: http://randd.defra.gov.uk/
[5] MB0120: http://randd.defra.gov.uk/

- For Question 1, it was noted that having lower confidence in the spatial distribution of a feature should not necessarily preclude it from being designated *if* there was sufficient (usually moderate) confidence in the feature presence and further data were being gathered that were likely to improve confidence in its extent. Conversely, moderate confidence in feature presence may not always provide sufficient certainty that the particular recommended feature is actually present in the site where this confidence is assigned only on the basis of evidence supporting the presence of its *parent feature* (i.e. data supporting EUNIS Level 2 rather than EUNIS Level 3 habitats)[6]. Therefore moderate confidence in feature presence alone may not be sufficient evidence to designate that feature in a site, and equally having information on extent of a feature within a site may not be necessary on all occasions.

- For Question 2, the 50% rule used during the Tranche One process does not take account the relative spatial extent of each feature. For example if a site had eight features, of which only three had at least moderate confidence in feature presence and feature extent and also together covered a large proportion of the area of the site, the site still may not be designated even though the remaining five features for which evidence is limited maybe geographically highly localised and/or cryptic species which are difficult to verify.

Defra asked JNCC and Natural England provide further expert advice on whether the scientific evidence supports the designation of a feature or site. This current paper sets out the approach taken in 2014 by JNCC and NE to develop their advice packages on MCZs, that can be applied by Defra within the decision making process.

3 Determining when a feature/site should be designated

Following reflection on the original methodology used by Defra during Tranche One, JNCC, NE and Defra have together identified additional questions that are helpful to consider to fully understand whether a site/feature has enough evidence to support its designation. A flow chart is set out below that proposes a more refined approach for making these determinations. This approach ensures that all types of evidence available are used when considering whether there are justifiable reasons for a feature and/or site to be designated a MCZ. The approach allows for expert judgement to contribute to the decision on whether

[6] See Table 2 in Technical Protocol E and Guidance on aspects of the practical application of the Technical Protocol E for Marine Protected Areas work

there is enough scientific evidence to support a site/features inclusion in future consultations. An explanation of the questions outlined in each flow chart is explained later in this section.

The approach for features seeks to answer two questions. The first question is 'Are there enough data to support the designation of a feature?' and considers the outputs of the application of Technical Protocol E relating to whether a feature has enough data to be designated. The second question considers situations where the data confidence may be limited but there are other factors that could provide an alternative basis for a feature to progress: 'Are there additional conservation/ecological considerations that support priority designation of a feature?'. This question considers any risk of damage to the feature or whether there are significant benefits to the network of designating the feature.

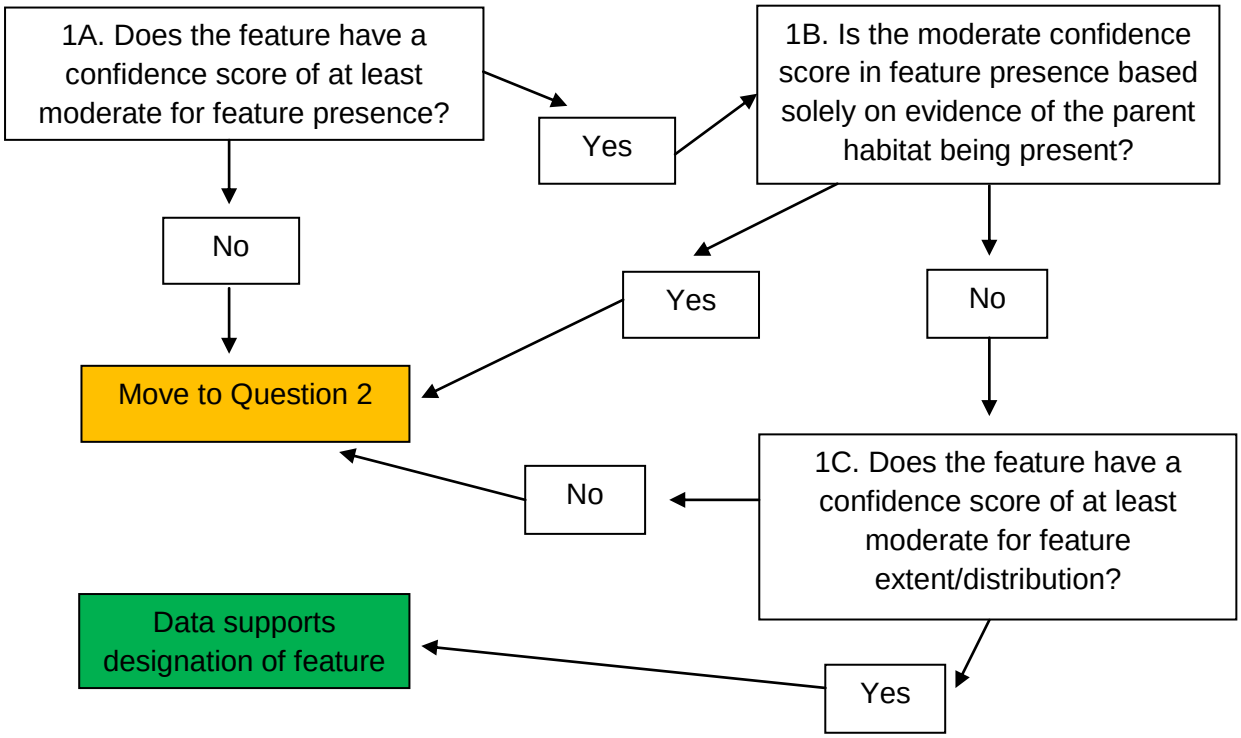
The approach for sites has been developed to provide sufficient information for Defra to make decisions on whether sites have enough data to support designation. This information includes site specific instances where feature interaction needs to be considered; a short narrative outlining the outputs of the big gap analysis[7]; and the spatial proportion of a site - where this is possible - whose features have adequately answered the feature specific questions above.

Within the approaches to both features and sites, the likely availability of new data subsequent to JNCC's and NE's evidence assessments can be considered as these data may alter the confidence in a feature or features.

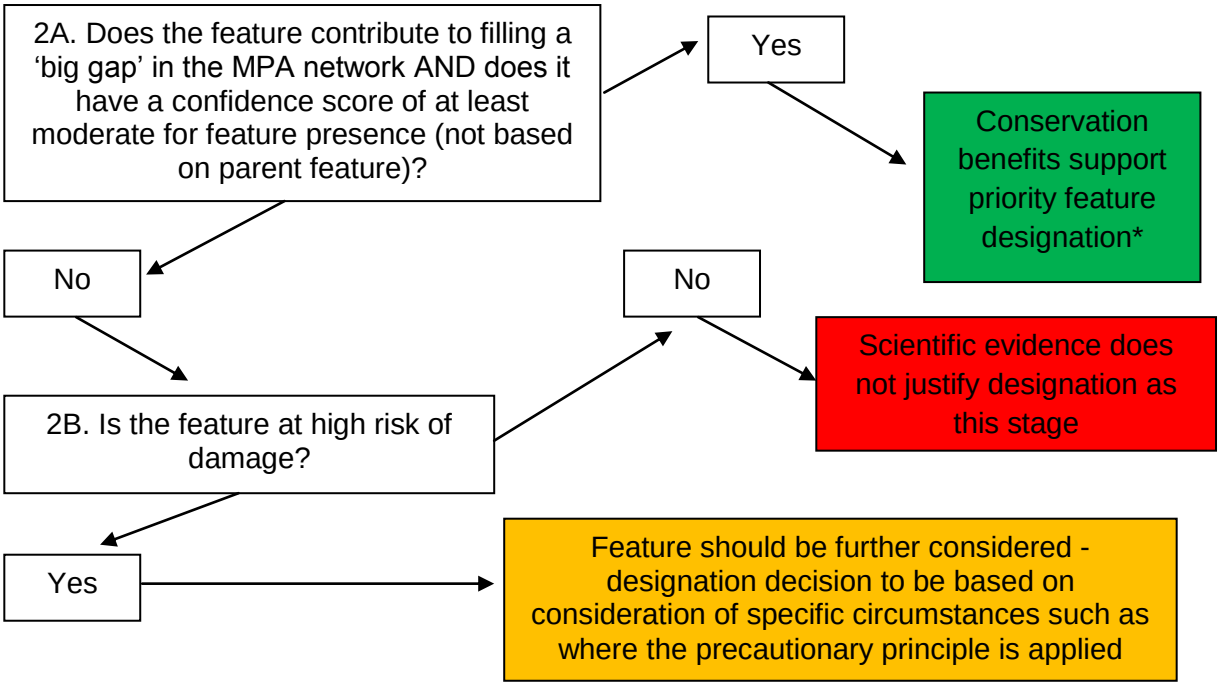
[7] Identifying the remaining MCZ site options that would fill big gaps in the existing MPA network around England and offshore waters of Wales & Northern Ireland, JNCC, 2014: http://jncc.defra.gov.uk/pdf/140224_BigGapsMethod_v7.pdf

Chart 1: A step by step approach to determining whether a feature should or should not be designated from a scientific evidence based perspective

Question 1: Are there enough data to support the designation of a feature?



Question 2: Are there additional conservation/ecological considerations that support priority designation of a feature where data confidence may be limited?



***subject to considerations listed in explanatory text below**

Question 1 relates to the confidence scores assigned to a feature's presence and a feature's extent when following Technical Protocol E and the supplementary guidance. Scores can range from High confidence to Low confidence. Where a feature has been assigned No confidence in feature presence, it should automatically be considered as a feature not being suitable for designation at this time. The output of the Question 1 tests will be displayed in a table for each feature within each site.

Question 1A applies the outputs of the Technical Protocol E. If the answer is 'No' then the data do not support the feature for designation as confidence in the features presence would be 'Low'. If the answer to the question is 'Yes' then Question 1B is considered.

Question 1B is necessary because it is possible for a confidence score of Moderate to be assigned to a habitat feature where the data for that feature are only based on its parent feature rather than the feature itself. For example, there may be sufficient evidence to determine that EUNIS Level 2 A4 Circalittoral Rock is present in a site, but limited/no data to determine which Level 3 rock habitat is present in terms of Low, Moderate or High energy Circalittoral Rock. Therefore caution should be applied at this stage because there is a risk of designating the 'wrong' feature in the site. If the answer to the question is 'Yes' then the data do not support the feature for designation as there is limited certainty in the feature being present within the site. If the answer to the question is 'No' then Question 1C is considered.

Question 1C applies the outputs of the Technical Protocol E where extent refers to habitat features and distribution refers to species features. If the answer is 'Yes' then the data support the designation of the feature. If the answer is 'No' then the data do not support the feature for designation as the confidence in the features extent or distribution would be 'Low'. Therefore Question 2 is considered.

Question 2 is applied to all features for which the available evidence does not meet the criteria in Question 1. Question 2 focuses on whether there are wider conservation reasons why a feature should be considered for designation despite its current lower confidence in presence or extent. It addresses whether the feature may contribute towards filling a 'big gap' in the network or where a feature may be at risk of damage if it is not protected immediately. Where a feature is at risk or contributes toward filling a 'big gap', that feature should be designated subject to the criteria outlined below. The output from Question 2 should be displayed in a table for each feature within each site.

Question 2A uses the outputs of the JNCC work on *'Identifying the remaining MCZ site options that would fill 'big gaps' in the existing MPA network'*[8] (or any more recent network assessment as deemed appropriate to use) to consider whether a feature has been identified as contributing to filling a 'big gap'[9] and therefore should be considered for designation despite having a lower confidence in the supporting evidence. This factor is included to facilitate the designation of features that are most important to the network, particularly to ensure key features are identified during the consultation when collating any new evidence. Recognising the limitations outlined in the gap analysis methodology, and subsequent changes that may occur to features with improved data, expert judgement may need to be applied when reflecting on the gap analysis work and answering this question. There may be scenarios where a feature is considered less important than other features in a particular region but that those other features may have been determined as not being present or not being taken forward at this stage thus making the first feature more important than stated in the gap analysis. Any instances where this scenario is relevant and where expert judgement needs to be applied in answering this question should be quality assured and considered in light of the precautionary principle. As part of Question 2A, it is necessary that the feature must have moderate confidence in feature presence (not based on parent feature). Without applying these criteria a feature could still be designated even if a feature has low data certainty or where the feature itself is not known to be present simply on the basis that if present it would contribute to filling a big gap in the network. Through answering Question 2A, there is as a minimum moderate certainty that the feature is in fact present in the site before it is recommended for designation.

If the answer to Question 2A is 'Yes' then this feature should be designated. That said an element of expert judgement may be applied to ensure that features which have little data to support them are not designated solely because they *might* be there and therefore *may* need protecting. For example, a species may have multiple records which are older than six years to support it and meet the criteria in Question 2A. However in some circumstances (i.e. in particular within larger sites), it may not be logical to designate the feature as it might have limited evidence to support it within the site currently and thus there is a possibility the feature may not even be present in the site anymore and thus not actually at benefit to the

[8] 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, JNCC, 2014: http://jncc.defra.gov.uk/pdf/140224_BigGapsMethod_v7.pdf

[9] 'Big gaps' were determined by looking at elements of the OSPAR MPA network design principles - features, representativity, connectivity and resilience. The OSPAR MPA network design principles are described in: OSPAR Commission (2006). Guidance on developing an ecologically coherent network of OSPAR marine protected areas. No. 2006-03. A contribution to filling a 'big gap' means meeting one or more of the individual criteria used to identify 'big gaps' as outlined in the above paper.

network. Therefore it is important to use expert judgement to consider the sense of the outputs of Question 2A, rather than simply follow the strict answers.

Such use of expert judgement may include a consideration of further data that could be available in the near future. For example if Feature X has moderate confidence in feature presence (not based on knowledge of the *parent* habitat) but has low confidence in feature extent, it will strengthen the case for the feature to be designated if it is known that additional data will arrive within a year[10] of feature being designated. Such knowledge may be sufficient for the feature to progress further if there are grounds to expect the additional data to substantially improve the confidence in the extent of feature(s). Whereas if there are no anticipated additional data for the feature then it would be unlikely that confidence in the feature would increase in the near future and thus there are greater risks of designating it in the short term. Where potential additional data are available a brief explanation must indicate whether these data would likely to improve the confidence in feature presence/extent.

Note it is an expert judgement as to whether data being collected are likely to improve confidence and in some instances new data may lower the confidence in feature presence and/or extent. Therefore caution should be applied when factoring in the likelihood of additional data into the decision making process. In some circumstances, it may be appropriate to designate features which have low certainty in extent or distribution and where there are no further data expected. For example where we are highly confident in a feature's presence but have been unable to distinguish its location or spatial extent within a site due to a lack of acoustic information.

Where a feature has not been identified as contributing to filling a big gap in the network, it moves to Question 2B. Question 2B takes into account the results of the application of the approach to assessing feature risk (as described in Annex A) to allow for instances where features are at risk of damage from activities such that the threshold for certainty in the features presence and/or extent can be lowered so that protection for these features is more quickly sought (i.e. a precautionary approach is applied). Features are considered at high risk if they are:

- Feature is **highly sensitive** (with moderate/high confidence) to one/more pressures; or
- Feature is **highly vulnerable** to one/more pressures.

[10] A year has been chosen as this is considered a clearly defined period within which the availability of additional data should be reasonably foreseeable.

This combination allows for both current and future risk to features to be captured and for protection be sought soonest where it is considered appropriate to do so. JNCC and NE will use the outputs of the risk assessment for each feature to flag (in a table) where a feature is at risk (and has not passed Question 1 or 2A). Where a feature is judged as 'Red' for current or future risk[11], the feature will be flagged in JNCC's and NE's advice on whether there are additional conservation/ecological considerations that support priority designation of a feature where data confidence may be limited. Within JNCC's and NE's advice, those activities which are triggering a 'Red' risk for current and future damage will be listed. Note that JNCC and NE will not list these activities for future risk where a feature has 'Red' for current risk. It should be noted that JNCC's and NE's risk advice will not state whether a feature at high risk should be designated or not. In addition, for each Ecological Network Guidance[12] feature a list of the pressures (and associated activities) to which they are highly sensitive (with moderate or high confidence) will be provided in a tabular format with in an annex.

Defra will refer to the risk information provided in JNCC and NE's advice and then make a judgement as to the level of evidence supporting the feature against taking a precautionary approach to protect it in case it is there. For future risk this judgement also includes considering the likelihood of those activities occurring at that site and causing damage to the unprotected feature. Defra will not automatically seek to protect a feature identified as being high risk. There may be circumstances where a feature is identified as being at high risk, but has very limited supporting data and thus may not be present in the site (and thus not be at risk). In such instances, Defra will need to make a policy decision depending on the specific circumstances of the situation considering the level of evidence supporting the feature and the merits of taking a precautionary approach to protect it in case it is there. Within the context of this decision, the availability of any impending additional data may be factored into the decision, notwithstanding previously mentioned considerations in doing this. Where additional data may become available, JNCC and NE will flag its likely delivery in their advice to aid Defra's policy decision.

Flow Chart 2 will be followed when JNCC's and NE develop their advice on the scientific evidence supporting site designation. Each advice package will include a table outlining the answers to each question and indicate where any expert judgement had been used, a brief

[11] See Annex A: Assessing Feature Risk
[12] MCZ Project Ecological Network Guidance, JNCC and Natural England, 2010. Available from: http://jncc.defra.gov.uk/pdf/100705_ENG_v10.pdf

narrative will be provided within the advice that will outline specific circumstances for that use.

Chart 2: A list of questions where additional information is required in order for Defra to decide whether a site should designated from a scientific, evidence-based perspective

Q1. Are there grounds for considering designating more features at this site in order to fully protect one or more features which do have sufficient confidence?

Q2. Where this can be answered, what proportion of area do the features that meet Q1 in Chart 1 cover within the site?**

***This question is not applicable to sites where an MCZ was selected not to cover the entirety of the features present within the site.*

Q3. Does this site fill a 'big gap' in the network based on revised confidence assessments in feature presence and extent?

Question 1 tries to understand where there may be a relationship between particular habitats and species that require both to be designated to protect one or other, and in particular where existing feature confidence would prevent both features being designated. For example a species may have a higher confidence in feature presence or distribution than its supporting habitat feature following the application of Technical Protocol E but that without that habitat being protected, the species could be impacted. Therefore by identifying such instances, Defra will be able to consider whether a specific feature (or the site in general) should be designated in order to protect another feature with less data to support its designation.

Question 2 provides basic statistical information about the proportion of the site's area covered by features that have been classified as being strong candidates for designation following the process of answering Question 1 in Chart 1. The cumulative percentage score will allow Defra to consider the spatial proportion of features within the site having acceptable data certainty to support their designation and to make a judgement as to whether that area is sufficient for the whole site to be designated or not. It should be noted that there are a number of factors that need to be considered here. Firstly, Question 2 will not be undertaken where a site was selected not to cover the entirety of the features present within the recommended area. For example where a recommended MCZ overlaps with a Special Area of Conservation (SAC) and therefore contains other designated features, or the site boundary is defined by landward boundaries (such as estuarine sites) this calculation should not be undertaken as it may not give a sensible indication of how much of the site has acceptable data certainty. Furthermore there may be a number of sites where this calculation cannot be made, for example where there is limited information on the extent of a feature. In those instances, JNCC and NE will note where it has not been possible to answer Q2. Finally some habitat features may attain sufficient confidence for designation based only on point data, it will be helpful for such features to be identified when this question is answered.

Question 3 uses the outputs of the JNCC work on *'Identifying the remaining MCZ site options that would fill 'big gaps' in the existing MPA network'*[13] (or any more recent gap analysis assessment as deemed appropriate to use) to consider whether a site has been identified as filling a 'big gap'[9]. A flag (or brief narrative where appropriate) using the outputs of the 'big gaps' report will be provided and where possible amended to reflect updated knowledge of confidence in feature presence and feature extent within a site. For example

[13] Identifying the remaining MCZ site options that would fill 'big gaps' in the existing MPA network: http://jncc.defra.gov.uk/pdf/140224_BigGapsMethod_v7.pdf

where a site has been identified as filling a ‘big gap’ in the network for a feature (or features), a check of the changes to the confidence in these features may need to be undertaken as it may be they are not present in the site or at such a small scale as to no longer fill a big gap in the network. Conversely, any future data may indicate the presence of additional features that may make a site more important in filling a big gap in the network. Where a change is identified in the most recent analysis of big gaps following the undertaking of confidence assessments in feature presence and feature extent, this change will be flagged in both JNCC’s and NE’s advice. Any instances where this is relevant and where expert judgement needs to be applied in answering this question should be quality assured and considered in light of the precautionary principle.

This section will be will be followed when JNCC’s and NE develop their advice and provide additional information on site specific considerations. Each advice package will include summary information providing answers to the questions outlined in the chart.

4 Summary

The paper sets out an approach to provide Defra with advice on the interpretation of evidence and data certainty assessments to facilitate their decisions as to whether a feature and a site should be designated a MCZ based on the scientific evidence available. Note the decision on site designation is made by Defra/Ministers and includes factors beyond the scientific data.

JNCC and NE will use this approach to provide advice to Defra on MCZ designations. Our conclusions will be submitted as part of respective advice packages when required by Defra. JNCC's and NE's advice are developed using the Technical Protocols and meet the Government Chief Scientific Adviser's guidelines for preparing scientific advice[14]. Any advice provided using the approach outlined in this paper will be subject to respective Corporate quality assurance and review processes that will be described in our advice.

[14] Guidelines for preparing scientific advice: http://www.bis.gov.uk/go-science/science-in-government/strategy-and-guidance

Annex A: Assessing feature risk

Background

Risk in this context refers to risk of loss of or irreparable damage to a feature in the short term (i.e. in terms of the time it takes to get any management measures in place). It is provided by JNCC and Natural England to inform Defra's decision-making with regard to those sites selected for public consultation and ultimately for designation as a MCZ.

Rationale

This assessment provides information on site risk that captures risk to the individual features within sites. It captures both those features currently at risk of damage or deterioration (i.e. highly vulnerable features), and the risk with respect to highly sensitive features which are not currently considered to be vulnerable to ongoing activities but would be at high risk of loss or irrevocable damage should particular activities occur in the future.

Proposed approach

The proposed approach makes use of the vulnerability assessments for each feature, sensitivity information provided in the MB0102 sensitivity matrix and the combined feature sensitivity, pressures and activities matrix developed by JNCC and Natural England[15], in consultation with industry representatives and academics.

For each site, two risk scores (future and current) will be provided for each feature being advised on.

1. An assessment of future risk for each feature will be undertaken which is based on feature sensitivity to pressures, which is extracted from the MB0102 sensitivity matrix. Future risk will be categorised as High (Red), Moderate (Amber) or Low (Green) depending on how sensitive a feature is to pressures; if a feature is highly sensitive to one or more pressures it will be assigned a high future risk score (see table 1 below for all categories of future risk).

   The assessment of future risk will not incorporate any consideration of exposure of features to pressures from ongoing activities or any judgement of the likelihood of activities occurring in the future.

[15] Defra contract MB102, 2011. Available from: http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=16368

2. An assessment of current risk for each feature within a site will be undertaken which is based on the outputs of the vulnerability assessment. In contrast to future risk, current risk incorporates a consideration of exposure to pressures from ongoing activities. A feature is considered vulnerable to a pressure where it is both sensitive to and exposed to that pressure. Vulnerability and hence risk of damage or deterioration, increases with increasing sensitivity and exposure. Vulnerability to a pressure is categorised into low, moderate or high and this will be used to assess feature risk. Features which are assessed as highly vulnerable to one or more pressures are considered to be at higher risk of damage or deterioration and will be classed as at high (red) risk.

   While the assessment of current risk will incorporate consideration of exposure to pressures from ongoing activities, it will not include any judgement of the likelihood of new / different activities occurring beyond the immediate future (as this is captured by future risk).

Table 1: Categories for Future Risk and Current Risk

Future Risk	**Current Risk**
High Feature is **highly sensitive** (with moderate/high confidence) to one/more pressures.	**High** Feature is **highly vulnerable** to one/more pressures.
Moderate Feature is **moderately sensitive** (with moderate/high confidence) to one/more pressures; or Feature is **highly sensitive** (with low confidence) to one/more pressures.	**Moderate** Feature is **moderately vulnerable** to one/more pressures.
Low Feature is **moderately sensitive** (with only low confidence) to one/more pressures; or Feature is **not moderately/highly sensitive** to any pressures.	**Low** Feature is **not moderately or highly vulnerable** to any pressures.

Outputs

For each site a table will be provided which shows the future and current risk scores for all the features being advised on.