**JNCC Report
No: 519**

**An independent quality assurance of evidence assessments undertaken by JNCC for possible Tranche 2 rMCZs**

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**November 2014**

# Summary

To support the UK Government's designation of Marine Conservation Zones (MCZs), the Joint Nature Conservation Committee (JNCC) is responsible for assessing the evidence underpinning offshore MCZ features of interest (i.e. species of conservation importance, habitats of conservation importance, broad-scale habitats and geological/geomorphological features (Natural England & JNCC 2010).). At the request of the Department for Environment, Food and Rural Affairs (Defra), JNCC and Natural England produced Technical Protocol E and accompanying guidance (JNCC & Natural England 2012, 2013a), which set out the broad principles and approach for assessing the evidence underpinning features within MCZs and recommended MCZs (rMCZ). The assessment considers evidence from multiple sources and is used to determine the confidence in the evidence supporting the presence and spatial extent of features. In response to recent developments in JNCC's policy relating to the Quality Assurance (QA) of evidence (JNCC 2013b), JNCC has introduced a further QA step into its MCZ work by commissioning an independent audit of the application of Protocol E to features in offshore rMCZ. The Institute of Estuarine and Coastal Studies (IECS, University of Hull) was commissioned by JNCC to undertake this independent audit of the application of Protocol E. Three rMCZs were selected independently by IECS staff for analysis. These sites contained examples for all four feature types (including a geological/geomorphology feature). Several features were subject to expert judgement for the final confidence assessment. It was apparent that Protocol E had been rigorously and consistently applied to all features and between rMCZs. Where expert judgement had been applied, it resulted in a more accurate assessment of confidence and was firmly in the spirit of Protocol E. Although the reasoning for the use of expert judgement was clearly stated during the audit, it was found that supporting narratives and annotation attached to the evidence list often lacked sufficient detail to convey this as a stand-alone description.

**Statement of Impartiality and Contribution**

IECS operates under strict principles of independence and objectivity, providing best professional judgement in their reports.

Declaration of Involvement in the MCZ Identification and Designation Process

Dr James Strong - Mapping of the proposed Irish Sea MCZs, whilst employed by the Agri-Food and Bioscience Institute, Northern Ireland on behalf of JNCC and CEFAS.

- Dr Strong was the principal investigator and on-site auditor during this review. He was responsible for conducting the review of the evidence presented. He also produced this audit report.

Professor Mike Elliott - Member of the MCZ Science Advisory Panel and Member of the Independent Expert Review Group; (the SAP gave a critique of the evidence originally used to define the pMCZ, and the IERG previously assessed the role and adequacy of the MCZ Evidence protocols).

- Professor Elliott had an adversary role during the audit and inspected the assessment templates used with the review and final report.

Mr Daryl Burdon - represented 'Academia and Research' on the Yorkshire and Humber Regional Hub of the Net Gain (North Sea) MCZ project, and undertook an independent critical review of the methodologies employed and data used for the Economic Impact Assessment of the four regional MCZ projects on behalf of The Wildlife Trusts.

- Mr Burdon assisted in writing the ITT response and also reviewed the final report.

Although scientists and staff at the University of Hull (Institute of Estuarine and Coastal Studies) have worked on certain aspects of the MCZ process, the authors of this report have no vested interest in the MCZs, Defra or JNCC.

# Contents

# 1    Introduction

## 1.1  Background

To support the UK Government's designation of MCZs (Marine Conservation Zones), JNCC is responsible for assessing the evidence underpinning offshore MCZ features of interest, i.e. species of conservation importance (Species FOCI), habitats of conservation importance (Habitat FOCI), broad-scale habitats (BSH) and geological/geomorphological features (Natural England & JNCC 2010). At the request of Defra, JNCC and Natural England produced Technical Protocol E (JNCC & Natural England 2012, 2013a) which sets out the broad principles and approach for assessing the evidence underpinning features within MCZs. The assessment considers evidence from multiple sources and is used to determine the scientific confidence in the presence and spatial extent of features of interest.

JNCC has policies on evidence Quality Assurance (QA) to comply with the Government's policy on establishing the quality and use of evidence in its decision-making. The MCZ Evidence QA Group contains, amongst others, staff from JNCC, Natural England and the Marine Management Organisation, and is tasked with undertaking an internal QA of its MCZ evidence assessments before presenting them to its independent non-Executive MPA sub-group for final review and sign-off. In response to recent developments in JNCC's policy relating to the QA of evidence, JNCC has introduce a further QA step into its MCZ work by commissioning an independent consultancy to QA the application of Protocol E (and associated guidance document) to JNCC's evidence assessments.

The Institute of Estuarine and Coastal Studies (IECS) was commissioned to provide an independent audit of the application of Protocol E and associated guidance document within three offshore rMCZs selected independently by the IECS principal investigator. The audit was undertaken on the most recent draft assessments which were drafted for an impending evidence QA group meeting. Although specific feature assessments might change during future review, the objective of this audit was to determine the overall consistency and rigour with which Protocol E was being applied to the whole assessment process and these minor modifications, typically driven by data availability, do not invalidate this audit.

## 1.2  Aim and objectives

The overall aim of this project was for an independent scientist, supplied by IECS, to undertake a quality assurance audit of how the biophysical evidence underpinning each feature gave rise to the JNCC's confidence assessments, based on the approaches outlined in Protocol E (JNCC & Natural England 2012) and the associated guidance document (JNCC & Natural England 2013a).

Specifically to consider the following questions at a feature/site level for each rMCZ:

1. Based on the biophysical evidence, are the evidence assessments for the presence and extent of rMCZ features robust and in accordance with the intent and methods outlined in Protocol E and the associated guidance document?

2. Does the approach for capturing/recording the confidence assessment results, and reasoning behind them, provide a clear audit of how the Protocol E and Guidance have been applied?

# 2   Quality Assurance Methodology

The Principal Investigator for the audit was Dr James Strong (Senior Benthic Ecologist and Seabed Scanning Specialist) from IECS. Dr Strong is an experienced marine ecologist and specialises in the collection and processing of acoustic and ground truthing data, as well as habitat map production. The on-site audit was undertaken at JNCC offices in Peterborough on Monday 7 April and Tuesday 8 April 2014. The audit adopted an interview-style approach where the JNCC staff were asked a series of structured questions. The questions for each rMCZ case study were generated from a prepared assessment template that captured the fundamental approach outlined in Protocol E and associated documents. The JNCC client officer was then required to present the evidence to support a statement, value or finding. Where expert judgements have been used, documents and narratives detailing the reasoning and considerations of the panel were requested. Additional points were added regarding the clarity of accompanying narratives that expressed the application of Protocol E to end-users. The main audit points applied to each MCZ and feature are listed below.

The structure of the QA audit involved two main stages. The first stage involved the assessment of the overall structure of the MCZ evidence package to confirm the following:

- Are all features within the rMCZ listed and correctly classified by type (broad-scale habitat, habitat FOCI, species FOCI or geomorphological)?

- Have habitat FOCI with a high temporal variability been identified and the evidence assessment adjusted accordingly?

- Do all features within the rMCZ have a Protocol E evidence assessment?

The second stage was undertaken for each feature and forms the bulk of the assessment. The specific checks for each feature included:

- Does each feature assessment have an 'evidence source' list?

- Are the discussions held by the evidence QA groups included?

- Are data exclusions documented and justified with narrative from the QA evidence group?

- Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence?

- Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and/or survey report?

- Where relevant, has the age of the data been calculated correctly, displayed and reflected in the confidence assessment?

- Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment?

- When used, has the use of expert judgement been clearly identified? Has justification for the decision been provided? Was it necessary to resort to the use of expert judgement?

- Have the correct presence and extent confidence classifications been selected for the feature based on Tables 2-6 in JNCC and Natural England (2012, 2013a)?

- Habitat features: has the MESH confidence assessment method (MESH 2007) been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below the acceptability threshold suggested by MESH of 58%, has the raw data been extracted and used and the derived products rejected?

- Habitat features: has consideration been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented?

# 3   Audit results

Three potential candidate MCZ sites were selected by IECS staff, independently of JNCC, for inclusion in the evidence confidence assessment audit. The resulting sites were checked to ensure they contained a suitable number of broad-scale habitats, habitat FOCI, species FOCI and geological/geomorphological features. It was also important to have features where expert judgement had been applied. These rMCZs were North St George's Channel, Compass Rose and Offshore Brighton. This generated 20 features covering seven broad-scale habitats, two habitat Features of Conservation Importance (FOCI), three species FOCI and one geomorphological feature (Table 1). Expert judgement had been applied to several features for the original assessment of confidence.

**Table 1.** Features contained within the three selected rMCZs examined with the audit.

| Feature | North St George's Channel | | Compass Rose | | Offshore Brighton | |
|---|---|---|---|---|---|---|
| | Name | Type | Name | Type | Name | Type |
| 1 | A4.1 High energy circalittoral rock | BSH | A4.2 Moderate energy circalittoral rock | BSH | A4.1 High energy circalittoral rock | BSH |
| 2 | A4.2 Moderate energy circalittoral rock | BSH | A5.2 Subtidal sand | BSH | A4.2 Moderate energy circalittoral rock | BSH |
| 3 | A5.1 Subtidal coarse sediment | BSH | A5.1 Subtidal coarse sediment | BSH | A5.1 Subtidal coarse sediment | BSH |
| 4 | A5.2 Subtidal sand | BSH | A5.4 Subtidal mixed sediment | BSH | A5.4 Subtidal mixed sediments | BSH |
| 5 | A5.3 Subtidal mud | BSH | Smelt (*Osmerus eperlanus*) | S-FOCI | Ross worm reef (*Sabellaris spinulosa*) | H-FOCI |
| 6 | A5.4 Subtidal mixed sediment | BSH | Ocean quahog (*Arctica islandica*) | S-FOCI | Undulate ray (*Raja undulata*) | S-FOCI |
| 7 | A5.6 Subtidal biogenic | BSH | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | reefs | | | | | |
| 8 | Horse Mussel beds (*Modiolus modiolus*) | H-FOCI | | | | |
| 9 | G12 Drumlins | Geo | | | | |

## 3.1 North St George's Channel rMCZ

This site was the first rMCZ selected for audit. It was considered by the JNCC staff to be a large and complex site and the draft assessment was complete. The site had seven broad-scale habitats, one habitat FOCI and one geomorphological feature. The main documents presented for inspection included a site narrative, Microsoft Excel-based evidence list/data sources and an ESRI ArcMap GIS project. Where required, individual Excel data sheets and survey reports were also produced. The site had recent survey data from various sources. Habitat maps were also available for the site.

A detailed checklist was completed during the audit process and has been included within Appendix 1. The main checklist points that capture the application of Protocol E (and guidance document) have been summarised in Tables 2, 3 and 4 below. Additional comments have also been included.

**Table 2.** North St George's Channel rMCZ Protocol E evidence confidence assessment audit: overall structure.

| Audit item | Notes |
|---|---|
| Are all features within the rMCZ listed and correctly classified by type (BSH , habitat FOCI or species FOCI)? | Yes |
| Has the site narrative been presented? | Yes |
| Are the discussions held by the evidence QA groups included? | NA* |
| Are source reports of survey, methodologies and quality standards referenced and linked to the assessment? | Yes, although often remotely |
| Have habitat FOCI with a high temporal variability been identified and the evidence assessment adjusted accordingly? | None present |
| Do all features within the rMCZ have a Protocol E evidence assessment? | Yes |
| Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions |
| Are the evidence assessments robust and in accordance with Protocol E and associated guidance? | Yes |
| Does the approach capture the assessment reasoning and results? | Fairly well |

* The MCZ Evidence QA group met on two occasions prior to the IECS site visit and only examined the evidence available for each site and did not perform evidence assessments. As such, the minutes of the meetings are of limited use. During the audit, minutes for the meetings were presented but not directly relevant to assessing the application of Protocol E. It is understood that the MCZ Evidence QA group will be meeting after the audit to review the assessment results.

**Table 3.** North St George's Channel rMCZ Protocol E evidence confidence assessment audit: individual features. Expert Judgements (EJ) are numbered here and detailed in Table 4.

| Audit item | Feature | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | A4.1 High energy circalittoral rock | A4.2 Moderate energy circalittoral rock | A5.1 Subtidal coarse sediment | A5.2 Subtidal sand | A5.3 Subtidal mud | A5.4 Subtidal mixed sediment | A5.6 Subtidal biogenic reefs | Horse Mussel beds (*Modiolus modiolus*) | G12 Drumlins |
| Evidence source list present? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Is the source data present for the feature? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes[1] |
| Has the age of the data been correctly calculated, displayed and reflected in the confidence assessment? | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Have quality standards been stated and reflected in the evidence assessment? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | NA |
| Has expert judgement been used? | No | No | No | No | Yes EJ1 | No | Yes EJ2 | Yes EJ3 | No |
| Has 'presence' confidence been correctly selected? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Has 'extent' confidence been correctly selected? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Has the MESH confidence assessment method been applied? | Yes | Yes | Yes | Yes | Yes | Yes | NA | NA | NA |

[1] Geotiff without depth data. Corrected during audit.

The audit paid particular attention to the application of expert judgement. With respect to the North St George's Channel rMCZ, expert judgement had been applied to three of the nine features, namely A5.3 Subtidal mud, A5.6 Subtidal biogenic reefs and horse mussel beds (*Modiolus modiolus*). Expert judgement can be applied to presence and extent individually or to both aspects simultaneously. The use of expert judgement always resulted in confidence assessments being downgraded. Evaluation during the audit of the judgements contained in Table 4 found all to be justified and ultimately provided a more realistic assessment of confidence. However, some of the standalone narratives and accompanying explanations were barely sufficient to convey this reasoning without further explanation. More information is required on why confidence downgrades are required. Additional information regarding the size and composition of the expert group and level of agreement may also add credibility to

the downgrades. Although cumbersome, figures or maps may also be a more appropriate method for documenting why feature presence or extent has been downgraded. Overall, analysis of the data during the audit found that in all situations it was necessary to resort to the use of expert judgement.

**Table 4.** Reasoning and assessment of expert judgement applied to features.

| Label | Description | Audit assessment |
|-------|-------------|------------------|
| EJ1 | Confidence assessments for extent reduced. | Explanation during audit sufficient to explain reasoning. Text within narrative and evidence list just about sufficient to convey the required reasoning. |
| EJ2 | Confidence assessments for presence and extent reduced based on concerns about the lack of specificity between reef and individuals. | Clear and appropriate downgrade of confidence. Supporting text clearly states reasoning. |
| EJ3 | Confidence assessments for presence and extent reduced based on concerns about the lack of specificity between reef and individuals. | Clear and appropriate downgrade of confidence. Supporting text clearly states reasoning. |

Additional points are detailed below.

- No 'rules of thumb' (JNCC & Natural England 2013a) were required within the site analysis.

- Access to survey reports, method statements and literature was often required during the audit to substantiate particular points. A link to these reports was typically included in the evidence list for the features and provided the required detail for some confidence assessments. Some of the links were to a website which, considering the importance of these documents, felt a little remote and disconnected from the assessment. Local copies of survey reports contained within the evidence file structure may be more beneficial.

- No data exclusions were undertaken. The approach employed all available data. Consideration was then applied to the age, spread, density and distribution of the data when undertaking the confidence assessment. This is a safer and more thorough approach to data management and adds confidence to the general assessment of evidence.

- Minutes for the evidence groups were not included/available for use within the audit.

- During the audit, several evidence sources were referred to as being delivered imminently but not currently included within the evidence package. It may be useful to include a statement within the narrative indicating the 'completeness' of data collection and describe any significant information sources that are known but yet to be reported or included in the overall analysis.

### 3.1.1 General comments for the application of Protocol E to the North St George's Channel rMCZ

The North St George's Channel rMCZ was a large and complex site containing numerous data sources of varying appropriateness and quality. The evidence confidence assessment for the site was robust and firmly in accordance with the intent and approach defined in

Protocol E (and guidance document). Expert judgement had been used to over-ride Protocol E for several features. Analysis of the data for each judgement revealed all three confidence assessment downgrades were justified and provided a more appropriate description of the confidence.

## 3.2 Compass Rose rMCZ

This site was the second rMCZ selected for audit. It is a large site but with significantly less data available than the first rMCZ (North St George's Channel). The site had four broad-scale habitats and two species FOCI. The main documents presented for inspection included a site narrative, Excel-based evidence list/data sources and an ArcMap GIS project. Where required, individual Excel data sheets and survey reports were also produced. The data package for this site contained surfaces from BGS DigiSbs sediment layer and the MBO-102 contract. Point data was also included from BGS and the MBO-102 contract, and track data from the International Bottom Trawl Survey (IBTS) tows.

A detailed checklist was completed during the audit process and has been included within Appendix 2. The main checklist points that capture the application of Protocol E have been summarised in Tables 5 and 6 below. Additional comments have also been included below.

**Table 5.** Compass Rose rMCZ Protocol E evidence confidence assessment audit: overall structure.

| Audit item | Notes |
|---|---|
| Are all features within the rMCZ listed and correctly classified by type (BSH, habitat FOCI or species FOCI)? | Yes |
| Has the site narrative been presented? | Yes |
| Are the discussions held by the evidence QA groups included? | NA* |
| Are source reports of survey, methodologies and quality standards referenced and linked to the assessment? | Yes, although often remotely |
| Have habitat FOCI with a high temporal variability been identified and the evidence assessment adjusted accordingly? | NA |
| Do all features within the rMCZ have a Protocol E evidence assessment? | Yes |
| Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions |
| Are the evidence assessments robust and in accordance with Protocol E and associated guidance? | Yes |
| Does the approach capture the assessment reasoning and results? | Yes |

* The MCZ Evidence QA group met on two occasions prior to the IECS site visit and only examined the evidence available for each site and did not perform evidence assessments. As such, the minutes of the meetings are of limited use. During the audit, minutes for the meetings were presented but not directly relevant to assessing the application of Protocol E. It is understood that the MCZ Evidence QA group will be meeting after the audit to review the assessment results.

**Table 6.** Compass Rose rMCZ Protocol E evidence confidence assessment audit: individual features.

| Audit item | Features | | | | | |
|---|---|---|---|---|---|---|
| | A4.2 Moderate energy circalittoral rock | A5.2 Subtidal sand | A5.1 Subtidal coarse sediment | A5.4 Subtidal mixed sediment | Smelt (*Osmerus eperlanus*) | Ocean quahog (*Arctica islandica*) |
| Evidence source list present? | Yes | Yes | Yes | Yes | Yes | Yes |
| Is the source data present for the feature? | Yes | Yes | Yes | Yes | Yes | Yes |
| Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | NA | NA | NA | NA | Yes | Yes |
| Quality standards stated and reflected in the evidence assessment? | Yes | Yes | Yes | Yes | Yes | Yes |
| Has expert judgement been used? | No | No | No | No | No | Yes |
| Has 'presence' confidence been correctly selected? | Yes | Yes | Yes | Yes | Yes | Yes |
| Has 'extent' confidence been correctly selected? | Yes | Yes | Yes | Yes | Yes | Yes |
| Has the MESH confidence assessment method been applied? | Yes | Yes | Yes | Yes | NA | NA |

Expert interpretation accompanies all of the features within the narrative but the ultimate allocation of evidence confidence assessments was made by direct application of Protocol E thresholds. The extent of one feature was downgraded using expert judgement. However, this feature would have been downgraded according to Protocol E as the presence classification was low (the guidance states extent classifications cannot be greater than that of presence). Although some point data were available for the first feature (A4.2 moderate energy circalittoral rock), modelled surfaces were considered to be the primary data source. Being modelled, the recorded confidence assessment was correctly assigned as low. The other broad-scale habitat assessments based on the number and distribution of point data. Examination of the point data within ArcMap whilst cross-referencing Protocol E established that the data underpinning the presence and extent of these features had been correctly allocated confidence assessments.

Unlike the previous rMCZ, the Compass Rose site contained species FOCI. The attributes for the point data always indicated a collection date, hence allowing the age of the point to be calculated. The date from which the data are aged is presumed to be the report first draft date, i.e. it is presumed that the age of data is calculated from a specific point – this date is not specified but might be critical for some datasets on the six year cusp. It was presumed that the calculated age of the datasets was based on the date of the initial assessment date.

It might be clearer if an analysis date is specified within the evidence package or site narrative.

Additional points:

- Terminology within accompanying text in the evidence list was sometimes unclear, such as the use of 'extensive sampling' referring to a poor distribution of point data within a site.

- As with other sites, no 'rules of thumb' (JNCC & Natural England 2013a) were required within the site analysis.

- Access to survey reports, method statements and literature was often required during the audit to substantiate particular points. A link to these reports was typically included in the evidence list for the features and provided the required detail for some confidence assessments. Some of the links were to a website which, considering the importance of these documents, felt a little remote and disconnected from the assessment. Local copies may be more beneficial.

- No data exclusions were undertaken. The approach employed involved the inclusion of all data. Consideration was then applied to the age, spread, density and distribution of the data when undertaking the confidence assessment. This is a safer and more thorough approach to data management and adds confidence to the general assessment of evidence.

- Minutes for the evidence groups were not included/available for use within the audit.

### 3.2.1 General comments for the application of Protocol E to the Compass Rose rMCZ

Based on the often highly targeted survey effort for this site, many of the confidence assessments were transparent and easy to calculate. Protocol E assessments appeared to adequately reflect the actual confidence represented by the available data. The evidence confidence assessment for the site was robustly applied and firmly in accordance with the intent and approach defined in Protocol E.

## 3.3 Offshore Brighton rMCZ

The final rMCZ considered in the audit was 'Offshore Brighton'. Unlike the previous two sites, it was suggested that the evidence package for this site was in a slightly earlier stage of development. The site has four broad-scale habitats, one habitat FOCI and one species FOCI. The main documents presented for inspection included a site narrative, Excel-based evidence list/data sources and an ArcMap GIS project. Where required, individual Excel data sheets and survey reports were also produced. The evidence package for this site contained point data from the MBO-116 and MBO-120 contracts. Track data collected by IFREMER and presented in a peer-reviewed study was used for the species FOCI.

A detailed checklist was completed during the audit process and has been included within Appendix 3. The main checklist points that capture the application of Protocol E have been summarised in Tables 7, 8 and 9 below. Additional comments have also been included.

**Table 7.** Offshore Brighton rMCZ Protocol E evidence confidence assessment audit: overall structure.

| Audit item | Notes |
|---|---|
| Are all features within the rMCZ listed and correctly classified by type (BSH, habitat FOCI or species FOCI)? | Yes |
| Has the site narrative been presented? | Yes |
| Are the discussions held by the evidence QA groups included? | NA* |
| Are source reports of survey, methodologies and quality standards reference and linked to the assessment? | Yes, although often remotely |
| Have habitat FOCI with a high temporal variability been identified and the evidence assessment adjusted accordingly? | NA |
| Do all features within the rMCZ have a Protocol E evidence assessment? | Yes |
| Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions |
| Are the evidence assessments robust and in accordance with Protocol E and associated guidance? | Yes |
| Does the approach capture the assessment reasoning and results? | Yes |

* The MCZ Evidence QA group met on two occasions prior to the IECS site visit and only examined the evidence available for each site and did not perform evidence assessments. As such, the minutes of the meetings are of limited use. During the audit, minutes for the meetings were presented but not directly relevant to assessing the application of Protocol E. It is understood that the MCZ Evidence QA group will be meeting after the audit to review the assessment results.

**Table 8.** Offshore Brighton rMCZ Protocol E evidence confidence assessment audit: individual features. Expert Judgements (EJ) are numbered here and detailed in Table 9.

| Audit item | Features | | | | | |
|---|---|---|---|---|---|---|
| | A4.1 High energy circalittoral rock | A4.2 Moderate energy circalittoral rock | A5.1 Subtidal coarse sediment | A5.4 Subtidal mixed sediments | Ross worm reef (*Sabellaria spinulosa*) | Undulate ray (*Raja undulata*) |
| Evidence source list present? | Yes | Yes | Yes | Yes | Yes | Yes |
| Is the source data present for the feature? | Yes | Yes | No>Yes[1] | Yes | Yes | Yes |
| Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | NA | NA | NA | NA | NA | Yes |
| Quality standards stated and reflected in the evidence assessment? | Yes | Yes | Yes | Yes | Yes | Yes |
| Has expert judgement been used? | Yes EJ1 | No | No | No | Yes EJ2 | No |
| Has 'presence' confidence been correctly selected? | Yes | Yes | Yes | Yes | Yes | Yes |

| Has 'extent' confidence been correctly selected? | Yes | Yes | Yes | Yes | Yes | Yes |
|---|---|---|---|---|---|---|
| Has the MESH confidence assessment method been applied? | Yes | Yes | Yes | Yes | NA | NA |

1 = data source (MESH 'habitat map made from survey data') missing from ArcMap project. Information added during the audit. Potential recalculation of confidence outputs to follow.

**Table 9.** Reasoning and assessment of expert judgement applied to features.

| Label | Description | Audit assessment |
|---|---|---|
| EJ1 | Confidence assessments for extent reduced based on a spatial mismatch in feature location between surveys and use of a 'modelled' ground type surface and the available ground-truthing points were concentrated in a small and discrete area. | Explanation during audit sufficient to explain reasoning. Text within narrative and evidence list provided the minimum information required to convey the reasoning behind the judgement. Figure might aid the explanation. |
| EJ2 | Confidence assessments for presence and extent reduced based on concerns about the lack of specificity between reef and individuals. | Clear and appropriate downgrade of confidence. Supporting text clearly states reasoning. |

Expert judgement has been applied to both a broad-scale habitat (A4.1 High energy circalittoral rock) and habitat FOCI (Rossworm reefs (*Sabellaris spinulosa*)). The use of expert judgement has been justified in both situations and has resulted in a more accurate confidence assessment. One feature was entirely dependent on modelled surfaces for presence and extent – this was correctly allocated to a low confidence class. Other data sources were present that might have been useful for substantiating the presence and extent of this feature were not considered. The JNCC lead for this site has stated that this will be followed up. As with the *Modiolus modiolus* biogenic reef feature within the North St George's Channel rMCZ, the inability of the sampling devices to establish whether individuals are sparse or form biogenic reef required expert judgement to downgrade the presence and extent confidence assessment.

The availability of point data for the rest of the broad-scale habitats meant that establishing the confidence assessments was a straight-forward task by cross-referencing Protocol E thresholds. Equally, data points were displayed within ArcMap so that the spread, density and distribution could also be interpreted. The original Protocol E confidence assessment values were all found to be correct.

Additional points:

- As with other sites, no 'rules of thumb' (JNCC & Natural England 2013a) were required within the site analysis.

- Access to survey reports, method statements and literature was often required during the audit to substantiate particular points. A link to these reports was typically included in the evidence list for the features and provided the required detail for some confidence assessments. Some of the links were to a website which, considering the importance of these documents, felt a little remote and disconnected from the assessment. Local copies may be more beneficial.

- No data exclusions were undertaken. The approach employed involved the inclusion of all data. Consideration was then applied to the age, spread, density and distribution of the data when undertaking the confidence assessment. This is a safer and more thorough approach to data management and adds confidence to the general assessment of evidence.

- Minutes for the evidence groups were not included/available for use within the audit.

### 3.3.1 General comments for the application of Protocol E to the Offshore Brighton rMCZ

The features within the Offshore Brighton rMCZ were represented by modelled and point data. The evidence confidence assessment for the site was correctly applied and firmly in accordance with the intent of Protocol E.

# 4 Conclusions

## 4.1. Overall assessment of the application of Protocol E and accompanying guidance documents across the three rMCZ sites

Re-examination of the type, number and dispersal (density, spread and distribution) of the underlying data within the evidence packages revealed that all presence and extent confidence classifications were correctly derived from Protocol E (and guidance document). Expert judgement was applied to approximately a quarter of features. These judgements always resulted in the confidence assessment being downgraded. On close inspection during the audit, each judgement was justified and resulted in a confidence assessment closer to the realities of the data. Some of the associated text reasoning why expert judgement was applied is a bit too brief for some features. Where expert judgement has been applied to data lacking specificity about benthic form (reef building density or not), the explanation need not be any longer. However, some of the situations relating to spatial mismatch or highly heterogeneous ground would benefit from additional detail and maybe a figure containing a map.

In effect, the use of expert judgement can over-ride the conclusions of a direct interpretation of Protocol E. Within the three rMCZs examined, expert judgements consistently downgraded confidence assessments. Although it is easy to argue that these expert-led downgrades are 'safer' as an approach, it must be recognised that there may be perceived political implications of consistent downgrading. As such, the narrative accompanying these judgements should be as detailed as possible. For example, it is clear to a specialist that certain sampling gear may not be appropriate for the detection of a reef feature but details such as this are not always included. As expert judgements are the only significant modifications of Protocol E, there is an important onus to fully document the reasoning behind these re-assessments.

## 4.2 Recommendations

### 4.2.1 Recommendations for the application of Protocol E

It was noted that the Protocol E extent 'sample data covering less than X% of the recommended feature' test was applied at the site level and not that of the individual feature within a site. Without the background habitat maps with feature extent, the use of site data seems a sensible approach. However, where habitat maps were present with features

outlined (majority of the situations examined), the extent analysis was still at the site scale. A clarification may be required to state which spatial unit the extent of points are being considered against to avoid confusion.

The site narratives may also benefit from a statement outlining the extent of data collection for the evidence package. Reference can be made to pending surveys within these statements.

Use of standardised terms within narratives might facilitate the explanation of data and resulting confidence assessments. Protocol E guidance makes reference to the spread, density and distribution of data points. For several features, the spatial arrangement of data points resulted in downgraded confidence assessments. The accompanying text sometimes did not communicate these issues particularly clearly. It would be beneficial if narratives adopted set descriptors, such as density, spread and distribution, when discussing the spatial arrangement of data.

It is of note that high, moderate and low classifications are all used almost equally throughout the three rMCZs. High confidence was recorded in 16 assessments, moderate in 10 and low in 16. This suggests that the thresholds within Protocol E are appropriate and well-placed to separate data into the three classes.

## 4.2.2 Recommendations outside the application of protocol E

Habitat maps (from survey data) within Protocol E are uniformly recognised as high confidence data sources. It is suggested that habitat maps have a high value and utility for the MCZ process. However, this should not be taken as a high confidence as well. It is highly likely that the input data for most modern habitat maps can be considered high confidence. However, there is currently a large number of map modelling methodologies with differing predictive value. Furthermore, the assumptions regarding the relationship between the predictive power of derived acoustic variables and differing levels of biological description, as well as the potential for spatial extrapolation, are applied in differing ways between maps, changing their associated confidence greatly. The use of the MESH confidence assessment was only considered when multiple maps are present for the same location. It might be more appropriate to use this score for the allocation of confidence of all maps rather than presuming high confidence. Although the Protocol E has an in-built ground-truthing agreement analysis, it is likely that most of the point data would have been used as training data within the map production and hence do not present an independent analysis of agreement. Furthermore, the use of a 90% threshold for ground truthing agreement appears to be very high and fairly unrealistic for even the best habitat maps. This has been recognised by JNCC who have stopped using percentage agreement checks and none have been applied to the current round of MCZ confidence assessments.

The assessment of whether a data source has an associated quality standard is, in principal, an important consideration for confidence. The application of this Protocol E principal is undertaken on a 'yes or no' basis. A significant number of data sources are attributed with an unknown quality standard flag that are also recognised and used within the Protocol E assessment. Although one must be realistic about what level of differentiation can be achieved, the current approach appears a little crude and simplistic. Future development of the method should look to examine the relative merits of the different quality standard requirements and whether particular QA deficiencies actually reduce the value of observations when considered at such a large spatial scale. Clearly quality standards surrounding the correct identification of feature is critical. However, positional accuracy issues may be less important.

# 5    References

JOINT NATURE CONSERVATION COMMITTEE & NATURAL ENGLAND. 2012. *SNCB MCZ Advice Project – Assessing the scientific confidence in the presence and extent of features in recommended Marine Conservation Zones (Technical Protocol E).* Web address: http://jncc.defra.gov.uk/pdf/120111_SNCB%20MCZ%20Advice_Protocol_Feature%20Evidence%20V5.0.pdf

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JOINT NATURE CONSERVATION COMMITTEE. 2013b. *Joint Nature Conservation Committee evidence quality policy*. JNCC report: JNCC13 P15. Web address: http://jncc.defra.gov.uk/pdf/comm13P15.pdf

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NATURAL ENGLAND & JOINT NATURE CONSERVATION COMMITTEE. 2010. *The Marine Conservation Zone Project: Ecological Network Guidance.* Sheffield and Peterborough, UK. Web address: http://jncc.defra.gov.uk/pdf/100705_ENG_v10.pdf

# 6    Appendices

Detailed checklists for North St George's Channel rMCZ, Compass Rose rMCZ and Offshore Brighton rMCZ, completed during the IECS audit process.

## 6.1  Appendix 1

Checklists for the North St George's Channel rMCZ.

**Table 10.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit: overall structure (all features).

| Section | Audit item | Notes |
|---|---|---|
| Overall structure | Are all features within the MCZ listed and correctly classified by type (habitat, habitat FOCI or species FOCI)? | Yes. |
| | Have habitat FOCI with a high temporal variability been identified and the evidence assessment adjusted accordingly? | Not applicable. |
| | Do all features within the MCZ have a Protocol E evidence assessment? | Yes. Narrative presented and Excel sheet itemising data compiled and examined. |

**Table 11.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 1: A4.1 high energy circalittoral rock.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes. |
| | Are the discussions held by the evidence QA groups included? | Example minutes of the evidence QA group for this feature was provided during audit. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | All data included in assessment regardless of quality. This appears a more comprehensive approach. The assessment examines the total number of samples rather than excluding them by quality. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Over-arching document describes the data sources. No specific comments regarding the completeness of data extraction. Comments might be needed when surveys are yet to report and are currently not included. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Age variable as it's from Marine Recorder but not relevant for this type of feature. Interestingly the methods have been compiled into common types regardless of underlying confidence issues with individual methods. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes – Marine recorder standards. Is this of any value? Point for future development/recommendations. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No expert judgement applied. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. On discussion, the current confidence assessment is the most appropriate but I don't think the text adequately captures these considerations. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extract and used and the derived products rejected? | All point data so not applicable. |

| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | NA |
|---|---|---|
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Has been undertaken but not expressed as clearly as can be in text. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions undertaken. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Objective to collect all data. Sometimes awaiting data. Missing or awaited data needs to specified in site introduction. Narratives may benefit from additional statements detailing the extent of data compilation and completeness. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Marine recorder point data. Methods in table attributes. Sometimes oversimplified, e.g. 'stills'. Little information on collection platform etc. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | All Marine Recorder point data dated. Age not relevant here. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, Marine Recorder's own standards. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Concern that site is dominated by 4.2 records and certainty about 4.1 records diminished. General mismatch between surface and point data explained in narrative. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Low used. Matches presence. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw | Point data only hence Not applicable. |

| | | |
|---|---|---|
| | data been extracted and used and the derived products rejected? | |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Distribution of point data carefully considered and expressed in narrative. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Matches. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None. |

**Table 12.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 2. A4.2 moderate energy circalittoral rock.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | None excluded. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. Required. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Habitat map – derived from Multibeam Echosounder data. Data sources used in the production of habitat map not stated within immediate documents. Nearest link is to website with CEFAS report. This is perhaps a bit remote for this type of information which is vital in understanding confidence. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, but not required. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes – CEFAS standard. Needs sub-division and further explanation. What does CEFAS standard mean in relation to this MCZ selection process? |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert | No. |

| | | |
|---|---|---|
| | judgement? | |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes, habitat map results in high. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes. Percentage clearly stated. All MESH confidence calculations within one excel sheet. New confidence calculation present but not present for older one – to be checked. Action for JNCC staff. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Quality standards stated hence Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. Data points with habitat map well spread. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, habitat map and point data (multiple sources). |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, but not required. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | CEFAS and Marine Recorder quality standards. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No expert judgement applied. |

| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | No, but corrected within audit. Moderate to high. Typo accident only as correct in other linked assessment documents. |
|---|---|---|
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes, and all calculations are present in an Excel sheet. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, Multibeam Echosounder coverage of entire site and Ground-Truth (ground truthing) points gridded and well spread. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | OK, both match. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None |

**Table 13.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 3: A5.1 Subtidal course sediment

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes. |
| | Are the discussions held by the evidence QA groups included? | No, only summary. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions undertaken. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Habitat map and point data, no raw acoustic layers presented. Further analysis reveals that bathymetry is present. Marine Institute (ROI) Multibeam Echosounder data also present. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, but not necessary. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Many unknowns – might need to tighten up on whole classification of value of standards – see recommendations. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making | None used. |

| | process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | |
|---|---|---|
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. Number of records carefully checked to avoid double accounting. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Two data sets – old and new. Score present for new but not old. Calculations present and collated within one Excel file. All parameters listed and calculations clear. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Known quality standards present and stated. NA |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, but could be stated more clearly. Worth using standard terms for density, spread and distribution to emphasise that these checks have been done. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No, but not particularly relevant for the assessment anyway. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | All data now included. Absolute not relative assessment on sample number. Safe approach. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Derived Habitat map present with bathymetry. Point data present. Methodologies somewhat remote and hard to access via links to web. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, but not relevant. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. Quality standards stated. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making | None used. |

| | process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | |
|---|---|---|
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes. Point for recommendations: issue with percentage agreement. Often using same ground truthing points used for the production of the habitat map hence not an appropriate or independent assessment. Noted by JNCC who do not routinely use percentage agreement for assessments now. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Present for habitat map with Excel sheet. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, but not explicitly stated or documented. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Not applicable. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None used. |

**Table 14.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 4: A5.2 subtidal sand.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | None. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data included. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No statement of what's in or out of evidence list. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. Habitat map and point data. Bathymetry present as a GeoTIFF for habitat map. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, but not relevant. |
| | Does the survey report state which quality standards were used? | Yes, quality standards stated as a known standard. |

| | Is this correctly stated and classified in the evidence assessment? | |
|---|---|---|
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No expert judgement used. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes, presence confidence assessment correctly calculated using Protocol E. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not required. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, but not explicitly stated in narrative. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | None undertaken. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not undertaken. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | See above. Same data used. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Not relevant for broad-scale habitats. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, Marine Recorder and CEFAS. |

| | | |
|---|---|---|
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. Fairly decent explanation within narrative. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Correct. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None applied. |

**Table 15.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 5: A5.3 subtidal mud.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | None. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data included. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No statement of what's in or out. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. Habitat map and point data. Bathymetry present for habitat map. |
| | Has the age of the data been correctly calculated, displayed and | Yes, but not relevant. |

| | | |
|---|---|---|
| | reflected in confidence assessment? | |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, quality standards noted. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No expert judgement used. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes, presence confidence assessment correctly calculated using Protocol E. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not required. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes but not explicitly stated. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | None undertaken. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Missing. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | See above. Same data used. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Not relevant for broad-scale habitat. |
| | Does the survey report state which quality standards were used? | Yes, Marine Recorder and CEFAS. |

| | Is this correctly stated and classified in the evidence assessment? | |
| --- | --- | --- |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Text included in narrative to describe the expert judgement used to down grade the extent. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Extent downgraded to low based on mismatch between ground truthing and predicted habitat distribution. Rule correctly applied. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, hence downgrading of confidence assessment. Explanation of why evidence has been adjusted - could be more accompanying text. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Pass. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None applied. |

**Table 16.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 6: A5.4 subtidal mixed sediment

| Section | Audit item | Notes |
| --- | --- | --- |
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | None applied. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Habitat map and over 600 photographic stills. 58 tow points and some BGS data. Lots of data but site large. |

| | | |
|---|---|---|
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Ages included but not required. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None used. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes. Values presented. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not necessary as quality standards present. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. Stated in text. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | Nothing excluded. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, see above. |
| | Has the age of the data been correctly calculated, displayed and | Yes, but not required. |

| | reflected in confidence assessment? | |
|---|---|---|
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | CEFAS and BGS (British Geological Survey). |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes. Clearly calculated from Protocol E thresholds. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes, score of 84% allocated. Calculations included in Excel sheet. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Checked. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None used. |

**Table 17.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 7: A5.6 (*Modiolus modiolus* biogenic reef).

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | Minutes not included but copy of minutes shown during audit. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |

| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Point data only. Various sources. Typically dredged samples. |
|---|---|---|
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Assessed both a *Modiolus modiolus* biogenic reef (broad-scale habitat) and *Modiolus modiolus* beds (Habitat-features of conservation interest). |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Most unknown/non stated. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Expert judgement used. Uncertainty about whether species observed is biogenic or not. Method, i.e. dredge, not suitable for feature detection. Therefore, all presence and extent assessments reduced accordingly. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes, although it required lengthy explanation during the audit. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | No relevant. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | NA, low confidence assessment anyway. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, but still low confidence assessment. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No, but minutes of MCZ evidence group shown during the audit. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | Nothing excluded. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No. |

| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, point data. |
|---|---|---|
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Mostly 'unknown'. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Expert judgement applied following uncertainty about whether the species is present as single, semi-infaunal individuals or as biogenic reef. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes, low following the application of expert judgement. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Correct and both low. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None applied. |

**Table 18.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 8: *M. modiolus* beds (Habitat-FOCI).

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | Nothing excluded. |

| | | |
|---|---|---|
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Same data set as above – same classification as low. Extent the same. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, date of collection present. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, but typically unknown. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Expert judgement applied. See previous feature. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. See previous feature. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | NA – low anyway. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data | Not really. |

| Section | Audit item | Notes |
|---|---|---|
| | collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, point data present. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Mostly unknown. Low overall anyway. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Yes, see previous feature. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes, after expert judgement. See previous feature. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, but low anyway. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Both low. |
| | Have rules of thumb' been adequately described, justified and consistently used? | Not applicable. |

**Table 19.** Checklist for the North St George's Channel rMCZ Protocol E evidence assessment audit - feature 9: Drumlins (geological feature).

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | 2 items in evidence list. Multibeam Echosounder data from Marine Institute (RoI) used for extension. Multibeam Echosounder bathymetry not used in main area for Drumlin detection. Data |

| | | clearly available. Action for JNCC staff. |
|---|---|---|
| | Are the discussions held by the evidence QA groups included? | Not applicable. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Drumlin data probably expressed in Bathymetry for rest of site which had not been examined. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. Multibeam Echosounder Geotiff, but no depth data embedded in image. Corrected later in the audit. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Not stated. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | No standard. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None applied. Identification of drumlins from visual interpretation of the Multibeam Echosounder data. Rules for what is taken as a 'drumlin' would be helpful. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes, presumed to be high. Rightly or wrongly, Protocol E is high for all geomorphological features. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Marine Institute (RoI) Multibeam Echosounder data likely to be Order 1a yet unknown quality standards. Quality standards not relevant for geo features. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Not really. |
| Extent | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains |

| evidence list | | numerous attributes and links to documents. |
|---|---|---|
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | Nothing excluded. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, but GeoTIFF without depth values. Corrected during audit. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Not applicable. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Not stated. JNCC need to establish which International Hydrographic Organisation order used. For Marine Institute it's probably Order 1a. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes according to Protocol E. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | No. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Not really. Poorly described in narrative. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | As Protocol E. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None used. |

## 6.2 Appendix 2

Checklists for the Compass Rose rMCZ.

**Table 20.** Checklist for the Compass Rose rMCZ Protocol E evidence assessment audit: overall structure (all features).

| Section | Audit item | Notes |
|---|---|---|
| Overall structure | Are all features within the MCZ listed and correctly classified by type (habitat, habitat FOCI or species FOCI)? | Yes. |
| | Have habitat FOCI with a high temporal variability been identified and the evidence assessment adjusted accordingly? | None at site. |
| | Do all features within the MCZ have a Protocol E evidence assessment? | Yes. Narrative presented and Excel sheet itemising data compiled and examined. |

**Table 21.** Checklist for the Compass Rose rMCZ Protocol E evidence assessment audit - feature 1: A4.2 Moderate energy circalittoral rock.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Three sources of data – all modelled. |
| | Are the discussions held by the evidence QA groups included? | No, but probably not relevant. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | None. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Yes, lack of evidence explained in narrative. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Modelled surfaces and some point data. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | NA |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Modelled data only. CEFAS particle size analysis quality standards. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence | No, but some judgement applied as to what the primary data source was. |

| | QA group? Was it necessary to resort to the use of expert judgement? | |
| --- | --- | --- |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really, but presumed to be complete. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, but not required. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert | No, but some judgement applied as to what the primary data source was. |

| | | |
|---|---|---|
| | judgement? | |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes, following expert judgement. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not required. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Checked. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None used. |

**Table 22.** Checklist for the Compass Rose rMCZ Protocol E evidence assessment audit - feature 2: A5.2 subtidal sand.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | Nothing excluded. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really, presumed complete. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | 46 grabs 50 still and 16 video (tows). Separate tows and samples. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Not necessary. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided | Not applicable. |

| | | |
|---|---|---|
| | alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Classification high – good replication of recent data. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | NA as point data used. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Not applicable. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making | No. |

| | process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | |
| --- | --- | --- |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | High – Replication high, density good and distribution good throughout the site. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Not relevant for this feature. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None used. |

**Table 23.** Checklist for the Compass Rose rMCZ Protocol E evidence assessment audit - feature 3: A5.1 subtidal coarse sediment.

| Section | Audit item | Notes |
| --- | --- | --- |
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | 5 grabs, 26 stills and 2 tows. 1 British Geological Survey dataset. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear | No. |

| | | |
|---|---|---|
| | identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. High. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Moderate class: based on sample data covering less than 50% of the feature. More based on the negatives/mismatching samples elsewhere than the 4 positive particle size observations. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear | Not required. |

| | identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | |
|---|---|---|
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes, based on threshold. Rule levels presence and extent assessments. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Correctly applied to level assessments. |
| | Have rules of thumb' been adequately described, justified and consistently used? | Not applicable. |

**Table 24.** Checklist for the Compass Rose rMCZ Protocol E evidence assessment audit - feature 4: subtidal mixed sediment.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |

| | | |
|---|---|---|
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Interpretation only, no judgement applied. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | 3 grabs for presence and 1 British Geological Survey point. Clear failure of high threshold and moderate assessment selected. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? | Moderate – see previous feature – more based on negatives |

| | Is this correctly stated and classified in the evidence assessment? | elsewhere than positive results. Particle size samples also considered within the assessment.<br><br>Recurring issue with habitats occupying small spatial extent and low assessment confidence. |
|---|---|---|
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None used. Feature assessment clearly made using Protocol E and guidance document thresholds. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. Important consideration. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Checked. |
| | Have rules of thumb' been adequately described, justified and consistently used? | Not applicable. |

**Table 25.** Checklist for the Compass Rose rMCZ Protocol E evidence assessment audit - feature 5: Smelt SOCI.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data | Yes. |

| | collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | |
|---|---|---|
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | International Bottom Trawl Survey points in evidence package. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, included as table attributes and important for this feature as it is a species – feature of conservation interest. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | 10 points from multiple years. Confidence assessment based on Protocol E threshold and hence no expert judgement was required. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the | Not really. Presumed to be complete. |

| | assessment has used the best available evidence? | |
|---|---|---|
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. Point data. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Moderate – based on Protocol E thresholds. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None applied. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Checked. |
| | Have rules of thumb' been adequately described, justified and consistently used? | Not applicable. |

**Table 26.** Checklist for the Compass Rose rCMZ Protocol E evidence assessment audit - feature 6: *Arctica islandica* S-FOCI

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from | No exclusions. |

| | | |
|---|---|---|
| | the QA evidence group? | |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not stated. Presumed to be complete. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. One point. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, in attributes table. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Not for presence. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. 1 sample – IBTS. Poor sampling efficiency for this species. One sample equals low classification and extent/distribution is the same because of presence and extent levelling rule. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |

| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. |
|---|---|---|
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. Point datum. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Yes, downgraded to match presence. Although stated as an expert judgement, it actually follows the Protocol E rule. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes, based on equalling rule for extent confidence assessment to match, or be lower than, presence confidence assessments. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Applied correctly. |
| | Have rules of thumb' been adequately described, justified and consistently used? | Not applicable. |

## 6.3 Appendix 3

Checklists for the Offshore Brighton rMCZ.

**Table 27.** Checklist for the Offshore Brighton rMCZ Protocol E evidence assessment audit: overall structure (all features).

| Section | Audit item | Notes |
|---|---|---|
| Overall structure | Are all features within the MCZ listed and correctly classified by type (habitat, habitat FOCI or species FOCI)? | Yes. |
| | Have habitat FOCI with a high temporal variability been identified and the evidence assessment adjusted accordingly? | Yes. |
| | Do all features within the MCZ have a Protocol E evidence assessment? | Yes. Narrative presented and Excel sheet itemising data compiled and examined. |

**Table 28.** Checklist for the Offshore Brighton rMCZ Protocol E evidence assessment audit - feature 1: A4.1 high energy circalittoral rock.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data has been included and considered in analysis. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No clear statement. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, 6 sources listed in evidence list. Primary data is 15 video stills in North west of site (but one tow). Also one Marine Recorder point that had been excluded. Statement of exclusion woolly. Will be corrected. Action AR. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Stated and recognised standard but not sure of value as a QA step. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Not for presence. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes, five plus samples from a recent survey. Assessment based on Protocol E threshold. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Many unknowns but primary data with a known quality standards. |
| | BS & FOCI habitats: has consideration has been given to the | Not applicable. |

| | density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | |
|---|---|---|
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. Might be required. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, quality standards stated. See comment about presence. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Yes, distribution and lack of overlap with predicted feature has caused the confidence to be downgraded to low using expert judgement. Outside the workings of Protocol E but correct on a practical level and resulted in a more realistic assessment. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes, but expert judgement has been applied. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, in expert judgement process. |
| Overall feature | Check that extent confidence is never higher than presence | Checked. |

| assessment | qualifier. | |
| | Have rules of thumb' been adequately described, justified and consistently used? | Not applicable. |

**Table 29.** Checklist for the Offshore Brighton rMCZ Protocol E evidence assessment audit - feature 2: A4.2 moderate energy circalittoral rock.

| Section | Audit item | Notes |
|---------|-----------|-------|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data has been included and considered in analysis. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No clear statement. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, three data sources. All considered modelled. All presented. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Stated but not sure of value as a QA step. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Low – based on only modelled data being considered. Suggestion made that the video analysis for the tow is looked at again to confirm that energy regime is reflected in biological community. Modelled data has the lowest confidence. Energy probably has the lowest of the low. Think laterally to confirm the energy classification. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the | REC data 71% - calculations present. |

| | percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | |
|---|---|---|
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Not applicable. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Not applicable. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. Might be required. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, quality standards stated. See comment about presence. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Not required. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes. Modelled data only. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw | Yes. See above. |

| | data been extracted and used and the derived products rejected? | |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | They match. |
| | Have rules of thumb' been adequately described, justified and consistently used? | No. |

**Table 30.** Checklist for the Offshore Brighton rMCZ Protocol E evidence assessment audit - feature 3: A5.1 subtidal coarse sediments.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data has been included and considered in analysis. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No clear statement. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Stated but not sure of value as a QA step. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None required. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. Protocol E threshold of five plus observations exceeded. |

| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Yes |
|---|---|---|
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | All present. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Not necessary. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. Might be required. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, quality standards stated. See comment about presence. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Moderate – less than 50% distribution over the suggested extent of the feature. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Maybe. Distribution of points considered over site rather than feature extent. Rule consistently used for all assessments. |

| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | MESH map not presented within the GIS project. Percentage confidence source presented though. |
|---|---|---|
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, in assigning moderate. Clear statement in site narrative. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Checked. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None used. |

**Table 31.** Checklist for the Offshore Brighton rMCZ Protocol E evidence assessment audit - feature 4: A5.4 subtidal mixed sediment.

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data has been included and considered in analysis. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No clear statement. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, six data sources or so. 17 grabs, 198 stills and 20 camera tows (separate tows). |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Stated but not sure of value as a QA step. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None required. |

|  | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes. Significant quantity of ground truthing present. Protocol E threshold of five plus easily exceeded. |
|---|---|---|
|  | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | Some uncertainty about how % have been derived from composite studies. However, not required as based on point data for primary data source and assessment test. |
|  | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | All present. |
|  | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Not necessary. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
|  | Are the discussions held by the evidence QA groups included? | No. |
|  | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
|  | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. Might be required. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, except the MESH map. High confidence data source not present in GIS or considered. Needs to be found to establish whether best available data is being used. Update: MESH now present. Highlights a current mismatch between surfaces. MESH scores presented. Protocol E states that MESH score should be used to pick the best data set. However, JNCC state that either 1) Protocol E will be followed or 2) expert judgement will be applied following consultation and QA panel. |
|  | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes. |
|  | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, quality standards stated. See comment about presence. |
|  | When used, has the use of expert judgement been clear | Moderate – less than 50% over feature – but actually taken as |

| | identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | site. Is this important? |
|---|---|---|
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Maybe. Feature converted to site. See earlier comments. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | MESH map not presented. Percentage confidence source presented though. Not present in Geographic Information System. Action for JNCC staff. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes, in assigning moderate. Clear statement included in site narrative. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Checked. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None used. |

**Table 32.** Checklist for the Offshore Brighton rMCZ Protocol E evidence assessment audit: feature 5: 'Rossworm' reef (H FOCI).

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data has been included and considered in analysis. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No clear statement. |
| Presence data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, 2 sources. No sources able to detect reef. Hammon with six records. Grabs and stills (recent survey) has 2 video and 15 grab samples with data. None specify reef. Just species presence. |
| | Has the age of the data been correctly calculated, displayed and | Yes. |

| | | |
|---|---|---|
| | reflected in confidence assessment? | |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Stated but not sure of value as a QA step. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Yes, records are for species only and do not specify that they are part of a biogenic reef. However, a Sea Star report suggests reef may be present at one station. This is being investigated at present. As of the audit date, there is no firm evidence of reef hence expert judgement applied to downgrade the assessment. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes – low based on expert judgement of species present and no records of reef. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | All point data. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | One CEFAS own and one unknown. Overall classified as low anyway. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | No. Issue of species vs. reef overwhelming important. Spread density and distribution not necessary. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No. |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. Might be required. |
| Extent data | Is the source data present for the feature? What format are the data in? Is it supplied with a methodology and report? | Yes, point data shown and biological records for species. |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Not applicable. |

| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, quality standards stated. See comment about presence. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | Expert judgement has been used to reduce the assessment down based on uncertainty of whether records are single individuals or reef. Without statement about reef presence in source data, all downgraded to low. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes following expert judgement. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | NA |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | Yes. |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Checked. |
| | Have rules of thumb' been adequately described, justified and consistently used? | None. |

**Table 33.** Checklist for the Offshore Brighton rMCZ Protocol E evidence assessment audit - feature 6: Undulate ray (S-FOCI).

| Section | Audit item | Notes |
|---|---|---|
| Presence evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions. All data has been included and considered in analysis. |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | No clear statement. |
| Presence data | Is the source data present for the feature? What format are the | Yes, 1 data source. IFREMER. |

| | | |
|---|---|---|
| | data in? Is it supplied with a methodology and report? | |
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, n=10, n=7 and n=3 for old, moderate and new respectively. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Stated as unknown. High assessment therefore not possible and reflected in moderate classification. Also age of samples mostly 6-12 years. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | None. |
| | Has the correct 'presence' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See Presence 1 extent table below (Table X). | Yes, based on an unknown quality standards and age of samples. |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | NA as point data. |
| | BS & FOCI habitats: if the quality assessment is missing, has the category been reduced from high? | Yes, set to moderate. |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | No. |
| Extent evidence list | Does each feature assessment have an 'evidence source' list? | Yes, contained within a site Excel sheet. Sheet contains numerous attributes and links to documents. |
| | Are the discussions held by the evidence QA groups included? | No |
| | Are data exclusions documented and justified with narrative from the QA evidence group? | No exclusions |
| | Is there an assessment made of the 'completeness' of data collection and assessment? What is missing? Is it clear that the assessment has used the best available evidence? | Not really. Might be required. |
| Extent data | Is the source data present for the feature? What format are the | Yes, point data. Variable age. |

| | data in? Is it supplied with a methodology and report? | |
|---|---|---|
| | Has the age of the data been correctly calculated, displayed and reflected in confidence assessment? | Yes, expressed as moderate in overall assessment. |
| | Does the survey report state which quality standards were used? Is this correctly stated and classified in the evidence assessment? | Yes, quality standards stated. See comment about presence. |
| | When used, has the use of expert judgement been clear identified? Have the experts been listed or appropriateness been documented? Has justification for the decision been provided alongside the evidence assessment and has the decisions making process undergone quality assurance by the appropriate evidence QA group? Was it necessary to resort to the use of expert judgement? | No. |
| | Has the correct 'extent' confidence interval been selected for the feature based on Tables 2-6 in JNCC & Natural England (2012)? See feature 1 extent table below (Table X). | Yes, moderate based on age of records and lack of a quality standards |
| | Habitat of FOCI: has the MESH confidence assessment method been applied? Is the assessment included and correct? Is the percentage stated? If the assessment is below 58% has the raw data been extracted and used and the derived products rejected? | NA |
| | BS & FOCI habitats: has consideration has been given to the density, distribution and spread of point data used as evidence of feature extent? How has this been documented? | NA |
| Overall feature assessment | Check that extent confidence is never higher than presence qualifier. | Confirmed |
| | Have rules of thumb' been adequately described, justified and consistently used? | NA |