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Marine Conservation Zones

Natural England's advice to Defra on proposed Marine Conservation Zones to be considered for designation in Tranche 2

January 2016

Intertidal rock communities © Julian Bateson/Natural England

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If you would like to contact Natural England about this document or to request further information please email MCZINFO@naturalengland.org.uk

Frequently Used Acronyms

For a more detailed glossary of terms, please refer to Natural England's pre consultation advice to Defra on recommended Marine Conservation Zones to be considered for consultation in 2015, available at http://publications.naturalengland.org.uk/publication/5803843768025088

BSH: Broad-scale habitat
Cefas: The Centre for Environment, Fisheries and Aquaculture Science
Defra: Department for Environment, Food and Rural Affairs
ENG: Ecological Network Guidance
EUNIS: European Nature Information System
FOCI: Feature of Conservation Importance
GI: Geographic Information
GIS: Geographic Information System
GMA: General Management Approach
HOCI: Habitat of Conservation Importance
JNCC: Joint Nature Conservation Committee
MCZ: Marine Conservation Zone
MPA: Marine Protected Area
nm: Nautical mile
OSPAR: Convention for the Protection of the Marine Environment of the North-East Atlantic
pMCZ: Proposed Marine Conservation Zone
QA: Quality Assurance
rMCZ: Recommended Marine Conservation Zone
RSG: Regional Stakeholder Group
SNCB: Statutory Nature Conservation Body
SOCI: Species of Conservation Importance
SPA: Special Protection Area
SSSI: Site of Special Scientific Interest
UK BAP: UK Biodiversity Action Plan

Contents

1 Introduction

1.1 About this advice

This is Natural England's final advice to Defra on inshore (within 12nm) Marine Conservation Zones (MCZs) to be considered for designation in the second Tranche of the MCZ Project. It is based on further analysis of evidence received after the pre consultation data cut-off including that resulting from the public consultation process which ended on the 24 April 2015. The purpose of this advice is to support Defra's designation of Tranche 2 MCZs and to inform stakeholders of the most up to date scientific advice underpinning them. Advice is provided for the 16 proposed MCZs (pMCZs) and seven Tranche 1 MCZs with additional features in the inshore area which Defra consulted on between January and April 2015. It follows on from the pre consultation advice provided to Defra which supported their Tranche 2 MCZ consultation.

This advice consists of this document and one results spreadsheet: http://nepubprod.appspot.com/publication/4594304593952768

Similar advice on offshore MCZs (beyond 12nm) is produced by the Joint Nature Conservation Committee (JNCC) and can be found here: http://jncc.defra.gov.uk/page-6658

The results of the assessments, which are summarised in this document and can be found in detail in the results spreadsheet, have had a comprehensive technical quality assurance (QA) by Natural England's Chief Scientist and the advice overall has been signed off by Natural England's Chief Executive.

Natural England's pre consultation advice from December 2014 can be accessed via these links: http://publications.naturalengland.org.uk/file/4854074950287360 and http://publications.naturalengland.org.uk/file/5756440734072832.

1.2 How to use this advice

This advice document provides a brief update to the background information and methodologies which are described in more detail in the pre consultation advice documents from December 2014 (see above links).

Please note, however, that the spreadsheet of results accompanying this post consultation advice (http://nepubprod.appspot.com/publication/4594304593952768) provides the most up to date results for those Tranche 2 MCZs and features which were consulted on.

Within this document Natural England staff are referred to as follows:

National staff – project management and specialist technical staff who co-ordinate, set up and run analysis, assessment and quality assurance (QA).

Area Team staff – provide local knowledge and apply expert judgement to automated assessment results and feature and activity evidence.

Sector Specialists – National staff who provide advice on sectors (e.g. ports industry) or habitat and feature specialisms (e.g. fisheries).

1.3 Proposed Marine Conservation Zones in inshore waters*

16 Tranche 2 Proposed MCZs

MCZs are listed below in order of the regional MCZ project from which the MCZ was originally recommended: Balanced Seas, Finding Sanctuary, Irish Sea Conservation Zones, and Net Gain. For more information on the regional MCZ projects please refer to our pre consultation advice document.

Site descriptions and feature maps are included in **Section 6**. Follow the links below to go directly to relevant site-specific information:

1. The Swale Estuary
2. Dover to Deal
3. Dover to Folkestone
4. The Needles
5. Utopia
6. Mounts Bay
7. Runnel Stone (Land's End)
8. Newquay and The Gannel
9. Hartland Point to Tintagel
10. Bideford to Foreland Point
11. West of Walney
12. Allonby Bay
13. Cromer Shoal Chalk Beds
14. Holderness Inshore
15. Runswick Bay
16. Coquet to St Mary's

Additional features in seven Tranche 1 MCZs

1. Beachy Head West
2. South Dorset
3. Chesil Beach and Stennis Ledges
4. Torbay
5. Upper Fowey and Pont Pill
6. The Manacles
7. Fylde

*MCZs selected by Defra for consultation and potential designation are known as proposed MCZs (pMCZs). Prior to that they are recommended MCZs (rMCZs).

1.4 Application of standards and protocols

Natural England has a series of internal standards that staff follow in delivering work to ensure all advice provided and all decisions made meet Natural England's Evidence Strategy (Natural England, 2012) and the Government Chief Scientific Adviser's Guidelines on the Use of Scientific and Engineering Advice in Policy Making (Government Office for Science, 2010).

These standards include:

- Evidence Strategic Standard (Natural England, 2013a)
- Analysis of Evidence Standard (Natural England, 2013b)
- Publishing and Communicating Evidence (Natural England, 2013c)

2 Confidence in feature presence and extent of proposed Marine Conservation Zone (pMCZ) features

2.1 Aims of the section

The aim of this section is to describe how evidence has been analysed to assess our confidence in the presence and extent of proposed features within the pMCZs, in English inshore waters being considered for designation in Tranche 2, and to provide a summary of the results of this process.

2.2 Methods

This section refers to the results that are contained in the advice spreadsheet '*MCZ Tranche 2 Post Consultation Results Tables_January 2016'*: http://nepubprod.appspot.com/publication/4594304593952768. In undertaking this assessment new data which have become available since Natural England's pre consultation advice have been considered.

Natural England uses an automated process to analyse new data and evidence in order to initially assess confidence in the presence and extent of features in an MCZ. Results are then checked manually by National and Area Team staff as part of the quality control and assurance processes detailed in **Section 2.5**. Confidence is assessed using Technical Protocol E, which sets out the data that must be present to achieve different levels of confidence, such as habitat maps or point records (JNCC and Natural England, 2012a).

Where low confidence is reported for feature presence or extent, this may be due to only having a single record, habitat maps being based on modelled data only, or records being older than 12 years for species or temporally variable habitats. Where no confidence is reported this is due to a lack of data for presence, or conflicting data that show the presence of a different feature instead of the recommended feature.

As a general rule, Defra requires at least moderate confidence for both the presence and extent of a feature for it to proceed to designation, although there may be some exceptions to this, as outlined in the Data Sufficiency analysis (see **Section 5**).

Throughout the confidence assessment process, the following questions were considered:

1) Is there measurable or verifiable evidence for the presence of the features, ie broad-scale habitats (BSHs), Features of Conservation Importance (FOCI), which include Habitat and / or Species of Conservation Importance (HOCI / SOCI), geological / geomorphological features of interest, and non-Ecological Network Guidance (non-ENG) features, in the site?

2) Is there evidence of the spatial extent or distribution of these features in the site?

Since our pre consultation advice, further data have become available that have improved our understanding of the presence and extent of the features within the MCZs. This assessment has used 367 datasets in total, which include dedicated verification surveys and data provided through Defra's Tranche 2 public consultation which commenced in January 2015. Those evidence sources used in the production of this advice, and those that were unable to be used, can be found in Tables 2 and 3 respectively of '*MCZ Tranche 2 Post Consultation Results Tables_January 2016':* http://nepubprod.appspot.com/publication/4594304593952768.

2.3 Summary of results

This section provides a summary of the results that are contained in the advice spreadsheet '*MCZ Tranche 2 Post Consultation Results Tables_January 2016':* http://nepubprod.appspot.com/publication/4594304593952768.

Confidence in presence and extent was assessed for 285 features in 16 pMCZs and seven existing Tranche 1 MCZs (from which ten of the features are advised upon here).

In total, 59 features have improved in confidence for presence since our pre consultation advice, 56 have increased in confidence for extent, whilst six have decreased in confidence for presence and nine have decreased in confidence for extent. This is owing to newer data increasing our understanding of the sites and confidences being amended as a result.

These results show that 21% of assessments of feature presence have increased in confidence, 2% of assessments in feature presence have decreased, and 77% have remained unchanged (see Fig. 1). Twenty per cent of assessments have increased in confidence for extent, 3% have decreased, and 77% also remain unchanged (see Fig. 2). These results also show that 32 features that previously had confidence scores of moderate / low or less have improved in confidence for presence and extent since our pre consultation advice to the point that they now have sufficient confidence to be recommended for designation ie have moderate confidence or higher.

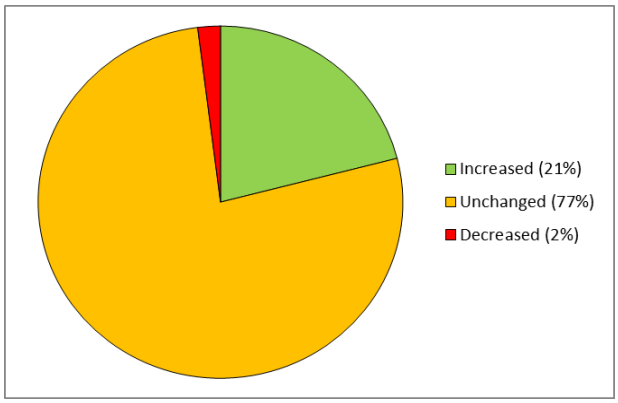


Figure. 1 Change in confidence in presence of features since 2014 advice

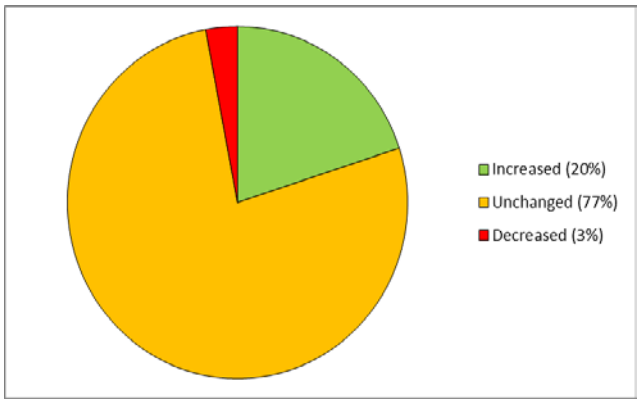


Figure. 2 Change in confidence in extent of features since 2014 advice

We now have high / high or high / moderate confidence in presence / extent for 58% of MCZ features within these sites, moderate / moderate confidence in 16%, low confidence (moderate / low, low / low) in 20% and no confidence in 5%. The remaining 1% represents geological features that were not assessed in this analysis. No additional supporting evidence has become available since the Regional Project stage and so the confidence assessments provided for the geological features have been taken from our previous advice in 2012.

The following tables can be found when referring to the advice spreadsheet '*MCZ Tranche 2 Post Consultation Results Tables_January 2016*': http://nepubprod.appspot.com/publication/4594304593952768.

Table 1 gives information about the features in each site: feature type (ie BSH, HOCI or SOCI); the 2014 and 2015 assessments of confidence in the evidence for presence and extent of each feature; the evidence used to determine the current assessment (further detailed in **Table 2**); any evidence not used (ie evidence of relevance to the site / feature which was not used in the 2015 confidence assessment – further detailed in **Table 3**); a narrative on decisions or expert judgement applied during the confidence assessment process; and other relevant feature information, for example whether the feature is highly sensitive.

Table 2 lists all the evidence used in the analysis of evidence for feature presence and extent.

Table 3 lists evidence of relevance to Tranche 2 rMCZs, which was not available in time to use in the 2015 assessments of confidence. A narrative is provided as to reasons for evidence not being used in this confidence assessment, including a note of instances where reports and / or uninterpreted data were made available to National and Area Team staff to inform upon expert judgement decisions made during the process.

Table 4 lists the ten features proposed for addition to seven Tranche 1 designated sites, and provides information regarding feature type, feature status, and confidence scores (these features are detailed more thoroughly in **Table 1**).

2.4 Application of standards / protocols / advice

Technical Protocol E (JNCC and Natural England, 2012a) supports the assessment of confidence in presence and extent of key MCZ features. JNCC and Natural England also developed supplementary guidance on aspects of the practical application of Technical Protocol E (JNCC and Natural England, 2013).

2.5 Quality assurance (QA) process

The Natural England MCZ Evidence Panel convened in May 2015 to assess all new evidence obtained following the final pre consultation confidence assessment and during the public consultation for its suitability for inclusion in the post consultation confidence assessment. Members of the Evidence Panel were selected for their knowledge and experience in analysing, interpreting and using evidence for site designations, and included representatives from Natural England, Cefas, JNCC and Plymouth University.

Suitability of evidence was determined using the following agreed screening criteria:

1. The evidence was submitted before a specified data cut-off date;
2. The evidence had not previously been used for production of Statutory Nature Conservation Body (SNCB) Statutory Advice on recommended MCZs;
3. The evidence contains physical or ecological information pertinent to a site, or selected features for previously designated sites, proposed for inclusion in the current tranche;
4. The evidence contains physical or ecological information on a potential MCZ feature;
5. The evidence could be converted into a Geographic Information System (GIS) format by a specified cut-off date;
6. The evidence is suitable for use in informing the confidence assessments in feature presence and / or extent (suitability for use can include whether the evidence has been interpreted and is in a useable format eg raw multibeam data that cannot be interpreted prior to the data cut-off date are excluded).

The outcomes of the decisions made for each dataset and consultation response were recorded in the Evidence Panel Audit Log and the Evidence Panel minutes, available on request from Natural England.

The automated confidence assessment process used by Natural England has undergone testing and QA conducted by Marine Mapping Ltd and a Natural England Geographic Information (GI) specialist prior to its use in the Tranche 2 confidence assessments. The outputs of the confidence assessment, alongside an audit trail of decision making, have been recorded.

Following the first run of the automated confidence assessment process undertaken to generate this advice, the results were subjected to a series of National and Area Team QA (June 2015). The National Team QA aimed to check that the automated confidence assessment process had been carried out correctly, verify the generated outputs, and to ensure all data standards and protocols were adhered to. All confidences that had changed since the pre consultation output results were manually checked and approximately 40% of all outputs verified. Any improvements made to the tool in the intervening period were checked alongside all occurrences of manual flags that required some form of expert judgement to be applied eg where confidence scores of moderate for presence and extent are derived solely on the basis of the presence of two or three survey points. A record of issues, discussions, decisions and actions was taken and is available on request from Natural England.

This was followed by the Area Team QA and workshops. The purpose was to check 100% of the confidence assessment results and discuss any incidences where the automated outputs were potentially at odds with expert local knowledge. The results in these incidences were discussed and agreed between National and Area Teams. To further enable appropriate external scrutiny of the results as well as consistency between approaches taken by Natural England and JNCC, an external representative from JNCC was present throughout the workshops. Issues, discussions, decisionsand actions were recorded.

Following a second run of the automated confidence assessment tool, a second National QA workshop was held in July 2015, to verify all actions identified during the first National and Area Team QA and Evidence Panel procedures. All changes in confidence were individually checked to verify the output results. These were subsequently circulated to the Area Teams for the second Area Team QA (July 2015) to further confirm all actions agreed during the Area Team QA workshops had been carried out and to validate the latest confidence assessment results.

A second Evidence Panel meeting was held in August 2015. The purpose of this second Panel was to review the final results and assess any manual changes made as a result of sense checks and expert judgement applied during the National and Area Team QA, prior to final internal sign-off.

2.5.1 Photographic evidence process quality assurance

Photographic evidence supporting pMCZ features were compiled into a catalogue in order to enable interrogation and QA. Once compiled, the catalogue was split between standalone photographic evidence and photographic evidence supporting records submitted via Marine Recorder.

All photographic evidence underwent quality control process during which Natural England marine ecologists examined all photos to ascertain whether they supported the features in question. Only photographic evidence that was scrutinised through this internal review was used for the assessment. Each standalone photograph was assigned a point data quality score from 1 to 3 based on its positional accuracy and how well it supported the feature, using the criteria outlined in the Technical Protocol E supplementary guidance paper (JNCC and Natural England, 2013). Those with a score of 2 or 3 were inputted to the next stage of the confidence assessment process. Photographs supporting Marine Recorder records were scored in the same way, and for those scoring a quality 3 the corresponding Marine Recorder record was upgraded from quality 2 to quality 3. As per pre consultation analysis and advice, with the exception of intertidal coarse sediments (where >1mm grain size could easily be confirmed by inclusion of a scale in images), all sediment habitat point data derived solely from images were included at EUNIS Level 2 to support presence of the parent habitat.

At the QA workshops the photographic evidence incorporated into the confidence assessment was reviewed with Natural England's Area Teams to ensure that the results of the confidence assessment accurately reflected the data submitted for each feature. Where possible, issues identified during this workshop were resolved, and where applicable further data subsequently added to the confidence assessment process following application of the QA process detailed above, by Natural England's Area Teams and Specialist Teams. Throughout these assessments and QA processes, site-specific aerial photography obtained from the Channel Coast Observatory was, where possible, also made available to support the QA data supporting intertidal features.

3 Condition assessment and General Management Approach

3.1 Aims of the section

The aim of this section is to describe how evidence was analysed to assess our confidence in the condition of proposed features within the pMCZs in English inshore waters being considered for designation in Tranche 2, and to provide a summary of the results of this process.

3.2 Methods

The purpose of this advice is to provide an assessment of scientific confidence in feature condition and to provide the proposed general management approach (GMA) for each feature within each pMCZ.

The Conservation Objective for each MCZ is for all of the features within it to be in favourable condition. To achieve this objective, the GMA required for a feature in an MCZ will be either for it to be maintained in a favourable condition (if it is currently in this state) or for it to be recovered to a favourable condition (if it is currently in a damaged state).

In undertaking this assessment new data which have become available since Natural England's pre consultation advice (2014) have been considered.

Natural England uses an automated process to initially assess the likely condition of proposed features before results are then reviewed by the Area Team staff and National Specialists who apply expert judgement and set a GMA. Confidence in the GMA result is assessed using Technical Protocol F, which sets out the data and feature sensitivity confidence scores that must be present to achieve different levels of confidence (JNCC and Natural England, 2012b).

Due to the lack of direct evidence of feature condition in the marine environment, the majority of the condition assessments were conducted by using a proxy assessment by assessing feature vulnerability, described in the Conservation Objective Guidance (JNCC and Natural England, 2011). The vulnerability assessment is based on the sensitivity of features to pressures to which they are exposed through socio-economic activities occurring in their vicinity.

Since our pre consultation advice on Tranche 2 MCZs we have conducted a stocktake of data to increase our understanding of socio-economic activities occurring in the vicinity of the site, and we have used updated evidence of feature presence and extent from the process described in **Section 2** of this document. Consultation responses submitted through the Defra consultation on pMCZs in 2013 and 2015 were reviewed for information on the presence of socio-economic activities in Tranche 2 MCZs and were considered during the vulnerability assessment. A stocktake of direct evidence of feature condition was conducted and evidence identified was considered during the vulnerability assessment process. The information on evidence used in this process is contained in the Evidence Panel Audit Log (available on request from Natural England).

In the absence of new evidence, or when new evidence was considered and it produced no significant change in feature vulnerability, the results for likely condition and GMA were brought forward from our pre consultation advice.

3.3 Summary of results

The section refers to results that are contained in the spreadsheet '*MCZ Tranche 2 Post Consultation Results Tables_January 2016*': http://nepubprod.appspot.com/publication/4594304593952768.

The following information is presented, in **Table 5**, for each feature of a site:

- GMA advised for consultation (pre consultation), GMA advised for designation (post consultation) and confidence in feature condition (columns F, G, H respectively)
- A rationale for changing the GMA if it has been advised post consultation (column I)
- Current and future risk of damage to or deterioration of each feature with narrative in some cases (columns J, K, L, M)

Of the 285 features which underwent a confidence assessment, 245 are presented in the results tables. These include 183 Maintain GMAs, 49 Recover GMAs and 13 without GMA due to no confidence.

The 245 features include:

- Regional Project recommended features for the Tranche 2 sites
- New features with moderate or high confidence in presence and extent

The 40 features that did not progress from confidence assessment to GMA are new features with insufficient confidence in presence and extent.

Revisions to GMA advice since our pre consultation advice:

- We are advising changes to GMA for 13 features of which 12 have changed from Maintain to Recover and one has changed from Recover to Maintain.
- We are unable to advise on GMA for 13 features as the confidence assessment for presence and extent of these features is 'no confidence'.
- We are advising on GMA for four new features that have not had this assessment before due to low confidence.

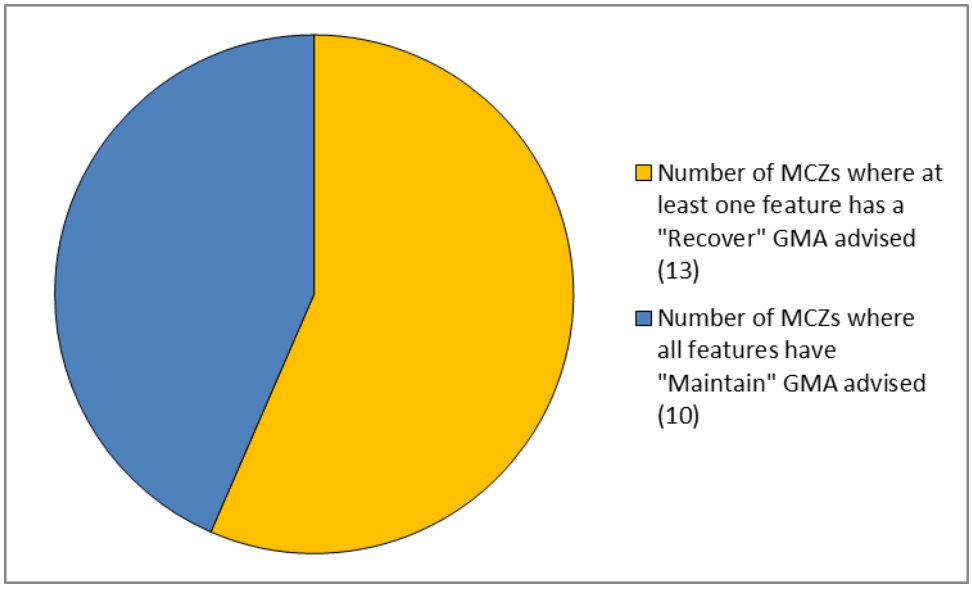


Figure. 3 GMA advised in Tranche 2 for 16 new MCZs and seven Tranche 1 sites with additional features in Tranche 2

3.4 Additional information

- Evidence indicating a feature's exposure to activities has been reviewed for the 232 features with at least low confidence in presence and extent (245 features minus 13 with no confidence).
- Where there is no new evidence on condition or vulnerability, the GMA advised at pre consultation has been resubmitted.
- Where there is new evidence, updated condition and vulnerability assessments have been carried out post consultation and the GMA revised, if appropriate, in light of that evidence.

3.5 Application of standards / protocols / advice

The Conservation Objective Guidance (JNCC and Natural England, 2011) was used to assess 'likely condition'. It outlines the vulnerability assessment process and the process for advising a GMA. Technical Protocol F (JNCC and Natural England, 2012b) was applied to assess the confidence in condition of features.

3.6 Quality assurance process

The inputs to the automated vulnerability assessment were quality assured by Geo Data Ltd and Natural England National staff and Area Team staff.

Outputs of the automated vulnerability assessment process were reviewed by Area Team staff who applied expert judgement using their local knowledge of the site where appropriate. Sector Specialists and Area Team staff reviewed decisions and expert judgement narratives. The audit trail of decision making is recorded within the Natural England MCZ GMA audit log (available on request from Natural England).

During the first Natural England MCZ Evidence Panel (see S**ection 2.5**) (May 2015) additional screening criteria were agreed for assessing relevant consultation responses which might contribute to the determination of the GMA and vulnerability assessment process.

The second Evidence Panel (August 2015) reviewed GMA results and the expert judgement narratives. The Panel focused on the evidence for features where a change from our pre consultation advice to Defra was being advised. The Panel also reviewed GMA results for new features which were not assessed pre consultation due to insufficient evidence.

The decisions made for each dataset, consultation response and reviewed result were recorded in the Evidence Panel Audit Log and the Evidence Panel minutes (available on request from Natural England).

4 Feature risk assessment

4.1 Aims of the section

The aim of this section is to describe how a risk assessment was conducted for proposed features within the pMCZs in English inshore waters being considered for designation in Tranche 2 and to provide a summary of the results of this process.

4.2 Methods

The purpose of this advice is to assess the risk of loss or irreparable damage to features from human activities, currently and in the future, for each feature within each pMCZ. This risk analysis allows Defra to consider features for designation even when our confidence in feature presence is low (see also S**ection 5.2.1**).

The risk assessment is produced using information sourced from other parts of our post consultation advice. This process does not require the gathering of new data and therefore any changes to risk results are due to changes to our advice on feature condition and GMA. The current risk assessment is conducted using vulnerability score results produced during our GMA post consultation advice described in **Section 3** of this document. The future risk assessment is conducted based on the feature sensitivity scores used in our advice on feature condition.

The risk assessment is designed to identify where features with low confidence in presence and extent should be considered further for designation based on the risk of them being impacted by human activities. The risk assessment results are then used to inform the data sufficiency analysis (see **Section 5**). Primarily the risk assessment is conducted on features that get to Question 2B in the data sufficiency analysis ("Is the feature at high risk of damage?"); this is a small subset of all features being considered in Tranche 2. However risk scores for all features considered under the GMA process is provided as this is a requirement of the MCZ Levels of Evidence paper (JNCC and Natural England, 2015) which underpins this work.

The method for the risk assessment and a definition of the risk categories is described in Annex 3 of the MCZ Levels of Evidence paper (JNCC and Natural England, 2015).

In summary, risk categories are assigned as follows:

Table a – Categories for future risk and current risk

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

4.3 Summary of results

The Feature Risk Assessment results are contained in Table 5 of the results spreadsheet *'MCZ Tranche 2 Post Consultation Results Tables_January 2016'*: http://nepubprod.appspot.com/publication/4594304593952768.

1) A total of 245 features were assessed
2) Ten of the risk assessment results were used in the data sufficiency process to advise that the feature should be considered further
3) Three of the ten features to be considered further are due to an assessment of **current** red risk
4) Seven of the ten features to be considered further are due to an assessment of **future** red risk
5) Comments on the suitability of red risk scores have been made where possible

The future risk score has been assessed on the feature's sensitivity to all possible activities in the site, as described in '*MCZ Levels of Evidence – Advice on when data supports a feature / site for designation from a scientific, evidence-based perspective*' (JNCC and Natural England, 2015 pg. 18). Natural England is unable to advise on the likelihood of future activities occurring that would lead to future risk scores; however where possible we have given a general comment under column M in the spreadsheet to indicate whether the future risk score is correct or is likely to be too high.

4.4 Application of standards / protocols / advice

The risk assessment is carried out using the categorisation process identified in Annex 3 of the MCZ Levels of Evidence paper (JNCC and Natural England, 2015). Risk results are obtained by categorising based on sensitivity and confidence in vulnerability for current risk and sensitivity for future risk.

4.5 Quality assurance process

National and Area Team staff reviewed all of the risk results for new features, and features with changed GMAs, in line with the method described in the MCZ Levels of Evidence paper (JNCC and Natural England, 2015). Area Teams reviewed the narratives provided in the pre consultation advice and updated where necessary.

5 Data Sufficiency – Advice on the scientific basis to support feature / site designation

5.1 Aims of the section

Following designation of MCZs in Tranche 1, a need was identified for Natural England and JNCC to provide Defra with specific advice as to whether an individual feature or a site has 'sufficient' scientific evidence to support its designation. The aim of this section is to provide details of these assessments and a summary of the results with the background to this assessment process being detailed in the 'MCZ Levels of Evidence' paper (JNCC and Natural England, 2015). This section refers to the results in the spreadsheet '*MCZ Tranche 2 Post Consultation Results Tables_January 2016':* http://nepubprod.appspot.com/publication/4594304593952768.

5.2 Methods and summary of results

5.2.1 Feature level data sufficiency

A confidence score of at least moderate in both feature presence and feature extent, based on the application of Technical Protocol E, determines whether a feature has enough supporting evidence (ie 'sufficient') to underpin its designation. Where it does not, then additional questions are posed to identify whether there are additional conservation / ecological considerations that support the designation of a feature even though data confidence may be limited. These include:

1. Whether designation of the feature would contribute towards filling a 'big gap' in the MPA network ie by meeting one or more of the big gap filling criteria as outlined in '*Identifying the remaining MCZ site options that would fill 'big gaps' in the existing MPA network*' (JNCC, 2014).
2. Whether a feature is likely to be at high risk of damage if it is not protected immediately (please refer to **Table 6**). Features were considered at high risk if:
    a. Feature is highly sensitive (with moderate / high confidence) to one / more pressures; or
    b. Feature is highly vulnerable to one / more pressures.

Depending on the answers to these questions there are four possible outcomes for each feature:

1. Data supports designation of feature.
2. Conservation benefits support the feature designation (Priority feature designation).
3. Scientific evidence does not justify designation at this stage (No designation).
4. Feature should be considered further by Defra (Further Consideration). Here, the designation decision should be based on consideration of specific circumstances for the feature and application of the precautionary principle.

Answers to each of these questions and the overall outcome for each feature are provided together with our advice on whether further data will be available in the near future that is likely to improve confidence in feature presence / extent. Such evidence could inform decisions for those features where the level of scientific evidence is currently limited but where the feature, if present, may be at high risk of damage.

5.2.2 Summary of results (feature level)

Feature level results are presented in **Table 6**. This draws on the feature confidence assessments displayed in **Table 1**, together with the additional information outlined above. It is important to note that Question 2 above (Q2) is **only** considered for features which are not already considered sufficient on the basis of Q1 (ie on the basis of their confidence in presence and extent alone), thus those features that are data sufficient based on Q1, will return an N/A (Not Applicable) result for all Q2 answers; 'Not Assessed' refers to instances where Q2 was not completed due to vulnerability assessments for these features not being undertaken.

A total of 282 features were examined during the data sufficiency assessments. As discussed in **Section 2.3**, geological features were not reassessed for this advice and therefore did not require a sufficiency assessment as our 2012 advice was deemed suitable.

- For 211 features the data were considered sufficient to support the designation of the feature.
- For two features the conservation benefits were considered to support priority feature designation.
- For eight features the scientific evidence did not justify designation at this stage.
- Ten features should be further considered.
- Fifty-one features were not assessed due to a vulnerability assessment not being conducted.

5.2.3 Site-level data sufficiency

The site-based assessment includes consideration of three questions:

1. To identify if there are any sites where designation of additional species may be required because they may provide direct ecological support to features identified for designation.
2. Where it is possible to calculate, what proportion of total site area is covered by features for which scientific confidence in presence and extent is assessed as being sufficient for designation.
3. A consideration of whether a site as a whole potentially fills a big gap in the UK's contribution to an ecologically coherent network of MPAs.

In order to assess the first question, SOCI and HOCI were investigated to highlight any relationship or dependency on other features (BSH, SOCI or HOCI) taking account of their feature definitions from the OSPAR List of Threatened and / or Declining Species and Habitats (OSPAR, 2008), and the UK List of Priority Species and Habitats (UK BAP) (BRIG, 2007). No incidences were identified where confidence in a 'supporting feature' would be too low for it to be designated based on usual considerations through this process and, as such, no further action was required for this stage.

The spatial proportion of sites covered by features where we have determined scientific confidence in presence and extent was assessed except in the following circumstances:

- The site overlaps with a Special Area of Conservation, and therefore the site may not have been put forward for all the potential MCZ features present within the site.
- The site has landward boundaries (such as estuarine sites).
- A feature is being added to an MCZ that is already designated.
- Information on feature extent within the site has been primarily derived from point data, and therefore the calculation areas could be misleading.

Natural England's assessment of whether a feature / site could potentially fill a big gap within the network is based on the updated outputs of the 'Big Gaps' work undertaken by JNCC for Defra in 2013 / 14 (JNCC, 2014). These outputs were cross-referenced with current feature confidence assessments to identify any instances where features enabling sites to fill big gaps had only low confidence.

5.2.4 Summary of results (site level)

Site-level results are presented in **Table 7**.

- Across all sites there were no instances where confidence in a 'supporting feature' was too low for it to be designated based on the usual considerations outlined in Protocol E.
- The proportion of total site area where features meet the data sufficiency requirements for designation was able to be calculated for 13 sites.
- Out of the 16 sites being considered through Tranche 2: eight are identified as still filling big gaps, with a further three sites that 'may fill a big gap'.

5.3 Application of standards / protocols / advice

The evidence / data sufficiency assessment takes into account the results / outputs of the confidence in presence and extent analysis and the vulnerability and risk assessments (amongst other elements); all of the protocols referred to in the previous sections of this document also apply here.

5.4 Quality assurance process

All assessments of features resulting in 'Priority feature designation' and 'Further consideration' outcomes from Question 2 were manually verified by National staff. At least 10% of assessments resulting in a 'No designation' outcome from Question 2 and those meeting Question 1 (Data supports designation) were also manually checked.

The updated big gap analysis undertaken by JNCC (JNCC, 2014) was used to identify which features may contribute towards filling a big gap at the site level within the network in conjunction with information on new incoming data that could be used to inform on MCZ features. Natural England's National staff verified 20% of the feature gap outputs and at least 20% of the final 'feature data sufficiency' results to validate the results and ensure consistency and coherency in the final results output. Specific checks, details and actions were logged.

In relation to the overarching site evidence sufficiency assessment, a checklist of feature dependencies and associated guidance was developed in-house. This was verified and amended where necessary following agreement by National staff prior to being passed to Area Team staff for analysis. A review of the results of the Area Teams' work was subsequently conducted by at least two Sector Specialists and Senior staff for production of the final results.

The areas within sites occupied by features with sufficient evidence were analysed and quantified by a senior GI specialist using queries in ArcGIS in order to determine the proportion of a given site that was covered by proposed features. The output was checked in detail by another GI specialist.

6 Site descriptions and feature maps

6.1 Aims of the section

This section contains site descriptions and feature maps for 16 inshore rMCZs recommended by the regional MCZ projects and seven existing Tranche 1 MCZs for which new features are proposed. 'Natural England's advice on the specific sites and features can be found in the results spreadsheet 'MCZ Tranche 2 Post Consultation Results Tables_January 2016': http://nepubprod.appspot.com/publication/4594304593952768. For further background information on the sites and features please refer to Annex 9 of Natural England's pre consultation advice to Defra on recommended Marine Conservation Zones to be considered for consultation in 2015, available at http://publications.naturalengland.org.uk/publication/5803843768025088. Please note, however, that the results listed in Annex 9 have now been superseeded by this post consultation advice.

6.1.1 Contents of the site-specific advice

Each site document contains the following information:

6.1.1.1 Site description

A general description of each site is provided, highlighting the key features for which the site is being proposed for designation.

6.1.1.2 Maps of the features within the pMCZs and MCZs for which advice is being provided

The site feature maps show presence and extent, where known, of features for which we have provided advice to Defra, including new features for MCZs designated in Tranche 1 in 2013.

Please note the following about the site maps provided:

- The maps do not include features where we have advised that there is no confidence in presence.
- Features for which we have no spatial geo-referenced data have not been mapped and thus do not appear in the legend.
- Features that are confidential, for example commercially sensitive species such as oysters, have not been mapped. Where this is the case a text box has been included on the map. Information about these features can be found in the site-specific advice text and Section 4 in the pre consultation advice document.

Where geo-referenced extent data are available, features have been mapped as polygons and where extent data are not available features have been mapped as points. For some sites, both polygon extent data and point data are available and in these cases both types have been mapped, and the feature appears twice in the legend.

Features for which we have no spatial geo-referenced data have not been mapped and thus do not appear in the legend. Similarly, features that are confidential, for example commercially sensitive species such as oysters, have not been mapped. Where this is the case a text box has been included on the map. Information about these features can be found in the site-specific advice text and Section 4 in the pre consultation advice document.

Due to the scale of the maps in printed form and the need for the maps to show the sites in their entirety, rather than split them, some features of very limited spatial extent, such as intertidal habitats, are not easily recognisable. However, their presence in the site is confirmed by the feature being listed in the legend.

It should be noted that the maps do not indicate confidence in the feature data. The assessment of the confidence in the evidence for feature presence and extent is given in '*MCZ Tranche 2 Post Consultation Results Tables_January 2016'*: http://nepubprod.appspot.com/publication/4594304593952768.

For some sites it has been possible to incorporate all BSHs and FOCI into the same map. For other pMCZs, especially those with many features, BSHs and FOCI have been separated and appear in two maps for clarity.

6.2 Site descriptions and feature maps

These site descriptions and feature maps should be used in conjunction with the results tables: http://nepubprod.appspot.com/publication/4594304593952768.

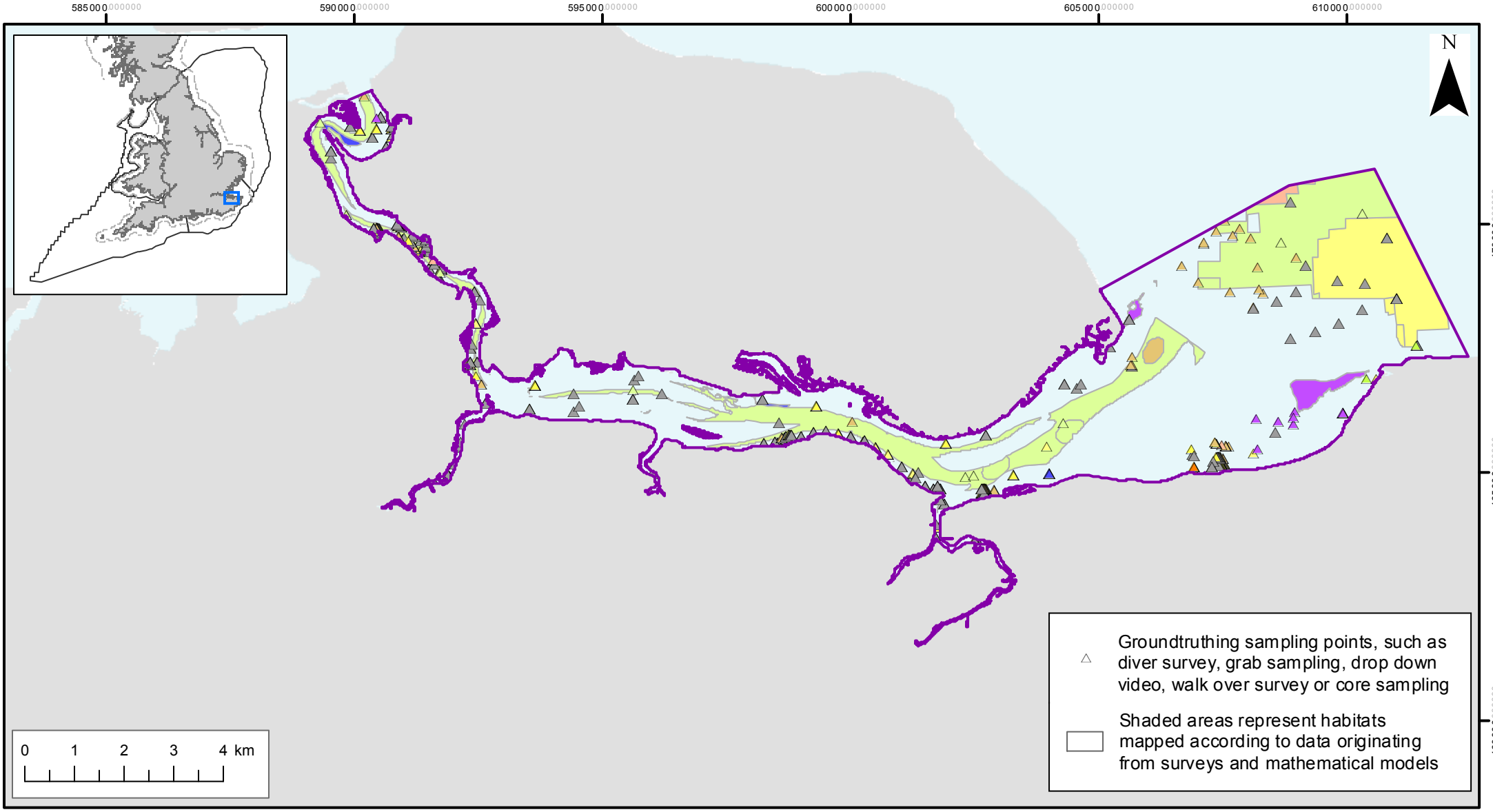
6.2.1 The Swale Estuary pMCZ

Site description
The Swale Estuary pMCZ is an estuary site measuring 51km². The site covers the Swale Estuary from the point at which it meets the Medway Estuary, south of the Isle of Sheppey, and extends seawards to the end of The Street at Whitstable. The area is made up of vast saltmarshes and grazing marshes.

The main channel of the Swale Estuary contains a range of subtidal broad-scale habitats, which have been identified for protection in the pMCZ to complement the intertidal broad-scale habitats protected by The Swale Site of Special Scientific Interest (SSSI) and Special Protection Area (SPA). The site contains some of the best examples of exposed London Clay. There is good scope for shellfish recovery to occur if the site is protected. The site is considered to be a highly biodiverse area, and is important as a spawning and nursery ground for various species.

Plate 1 View of the Swale from Seasalter, copyright Ingrid Chudleigh, Natural England

Plate 2 Seasalter London Clay (Balanced Seas, 2011)



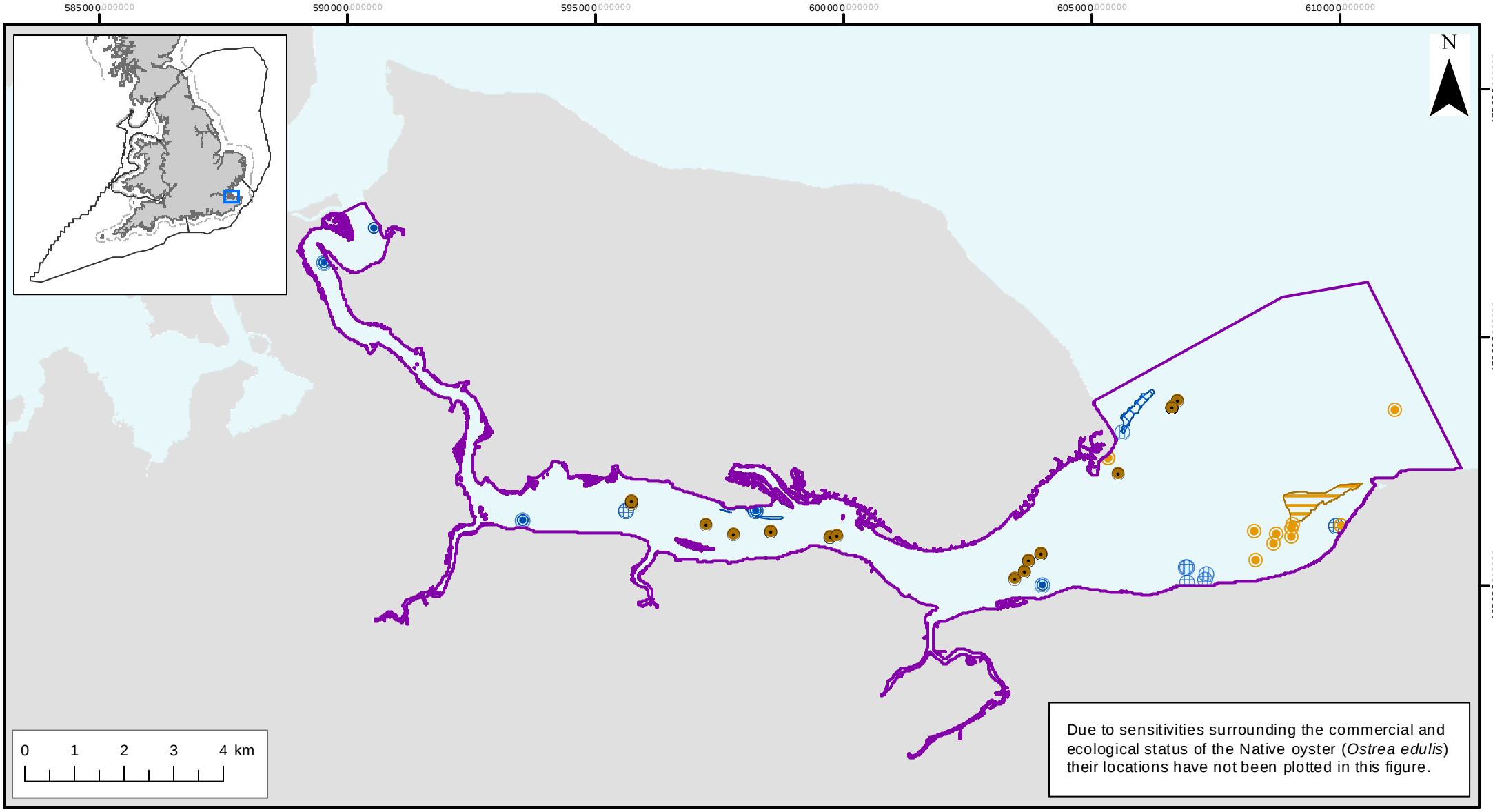
The Swale Estuary pMCZ Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- Intertidal mixed sediments (A2.4)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Subtidal mixed sediments (A5.4)

Reference: Theme ID: 1477562
Map Projection: British National Grid



The Swale Estuary pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nM Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Blue Mussel Beds
- Estuarine rocky habitats
- Peat and clay exposures

- Blue Mussel Beds
- Estuarine rocky habitats
- Peat and clay exposures
- Smelt (*Osmerus eperlanusi*)

Reference: Theme ID: 1477562
Map Projection: British National Grid

6.2.2 Dover to Deal pMCZ

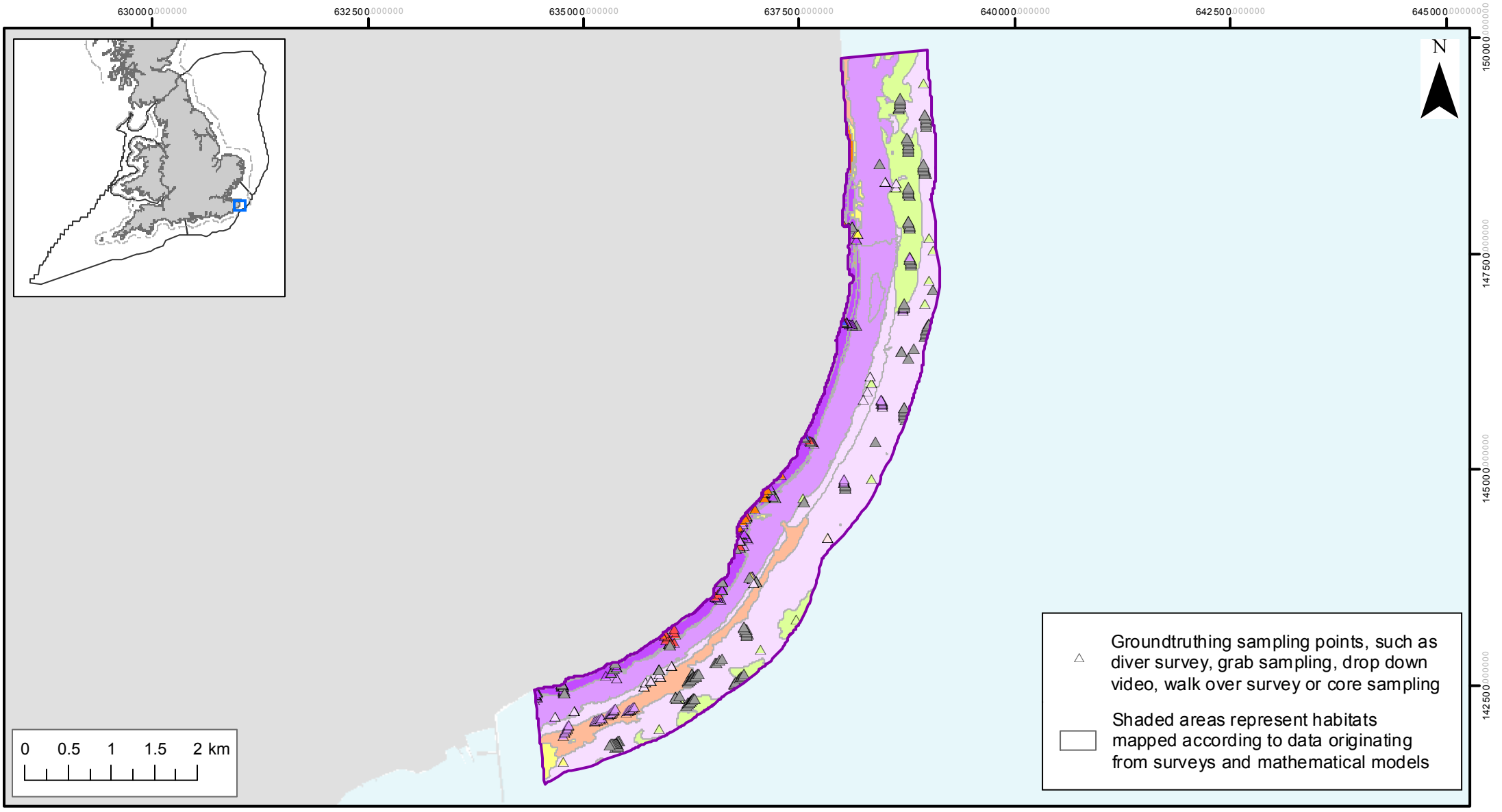
Site description

Dover to Deal is an inshore site off the south-east coast of Kent, situated just to the north-east of the major shipping terminal, Dover port. The site covers an area of 10km² and was recommended as an MCZ for its excellent examples of Littoral chalk communities and wave-cut platform, considered to be the best example in the region.

Below this platform lie gullies and rock pools, supporting ephemeral green algae, animal-grazed rock and brown wrack species, leading to mixed red algae and into a zone dominated by kelp at the low water. The chalk foreshore at St Margaret's Bay in this site represents the richest algal community in south-east England. Numerous other features are also proposed in this site, including the intertidal under boulder communities that encompass the wealth of rare sponge species that colonise this habitat. Well-developed ross worm (*Sabellaria spinulosa*) reefs are present on the lower shore, where sand fringes the edge of the chalk foreshore reef; these habitats recorded together are particularly rare in Kent and in fact unrecorded in the rest of the UK. This HOCI is also well developed subtidally off Kingsdown in a long continuous clump, providing habitat and shelter for numerous species.

Plate 3 Boulders and level platform showing chalk habitat and algal communities at Kingsdown (Balanced Seas, 2011)

Plate 4 Ross worm (*Sabellaria spinulosa*) reef on the foreshore, Kingsdown (Balanced Seas, 2011)



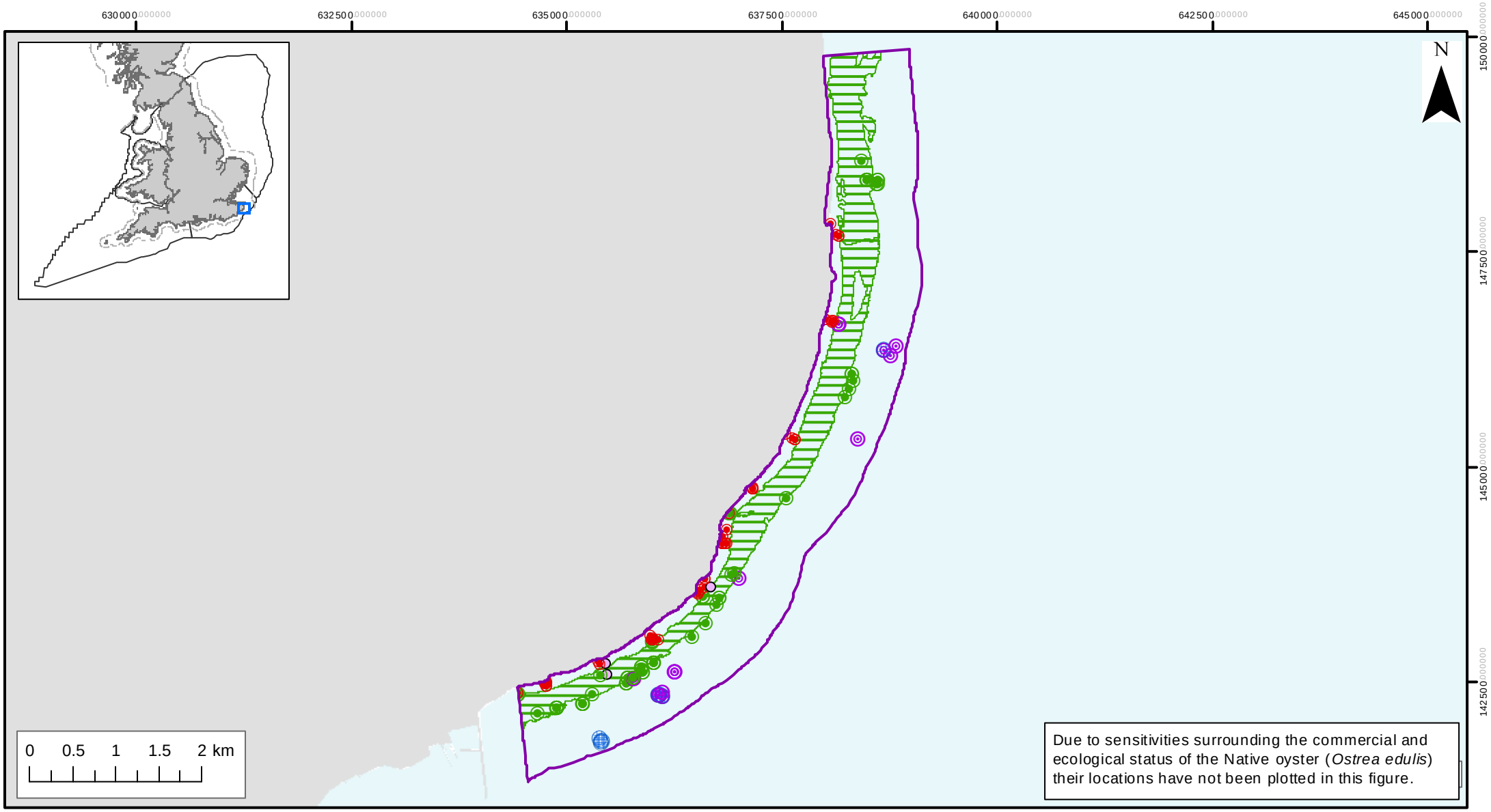
Dover to Deal pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- Intertidal mud (A2.3)
- Moderate energy infralittoral rock (A3.2)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mixed sediments (A5.4)

Reference: Theme ID: 1477563
Map Projection: British National Grid



Dover to Deal pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nM Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Subtidal chalk
- Blue Mussel Beds
- Intertidal under boulder communities
- Littoral chalk communities
- Ross worm (*Sabellaria spinulosa*) reefs
- Subtidal chalk

Reference: Theme ID: 1477563
Map Projection: British National Grid

6.2.3 Dover to Folkestone pMCZ

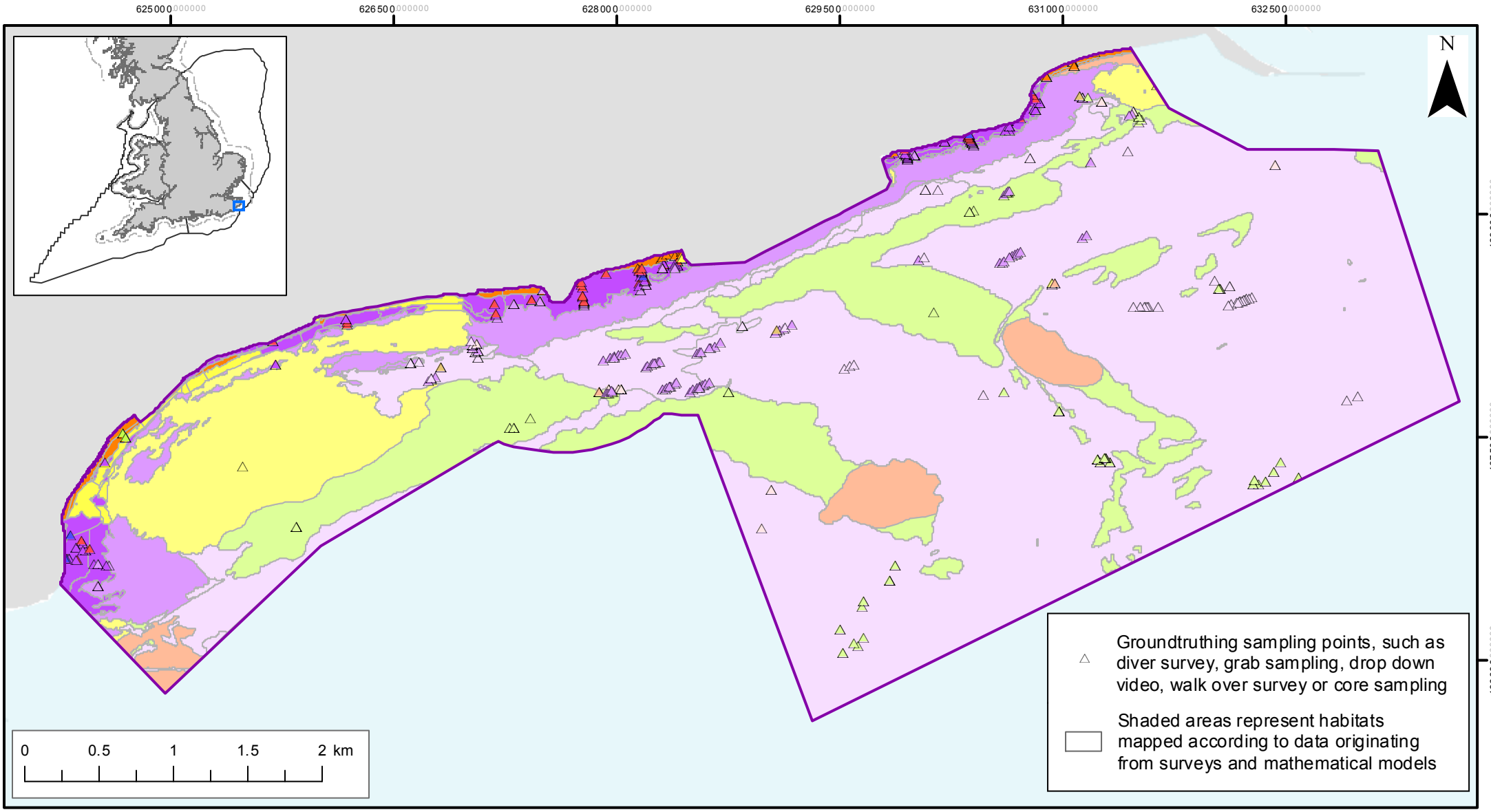
Site description

Dover to Folkestone is an inshore site off the south-east coast of Kent, situated just to the south-west of the major shipping terminal, Dover port. The site covers an area of 20km² and is recommended as an MCZ for its excellent and best regional example of intact ross worm reef (*Sabellaria spinulosa*) and one of the best intertidal underboulder community examples in the region.

It also has excellent examples of littoral chalk communities on intertidal and subtidal chalk reefs, with the wave-cut platforms in the site forming an almost continuous reef between Kingsdown and Folkestone Warren. These reefs grade seaward into subtidal coarse sediment. Very soft clay can be found at Folkestone Warren that supports different communities of algae, where larger kelp species are replaced with faster growing and lighter species of kelp. Harder rock habitat found in the vicinity of Shakespeare Cliff supports rich biota including Laminaria kelps, red algae and Polydora worm tubes. This harder rock is unusual in the largely soft rock and sediment-dominated south-east region and the rocky outcrops, ledges and boulders also support attached sponges, sea squirts, bryozoans, anemones and hydroids, as well as mobile species such as crustaceans, sea slugs and other molluscs, echinoderms and fish. Mixed sediment covering underlying geology is rich in mobile animals including brittlestars, squat lobsters, crabs, fish and molluscs. Wild and unharvested native oysters are found scattered across the site and there are several records of the short snouted seahorse (*Hippocampus hippocampus*).

Plate 5 Intertidal underboulder communities on Abbot's Cliff and Shakespeare Bay undercliff (Balanced Seas, 2011)

Plate 6 Short snouted seahorse (*Hippocampus hippocampus)* found at Shakespeare Bay (Balanced Seas, 2011)



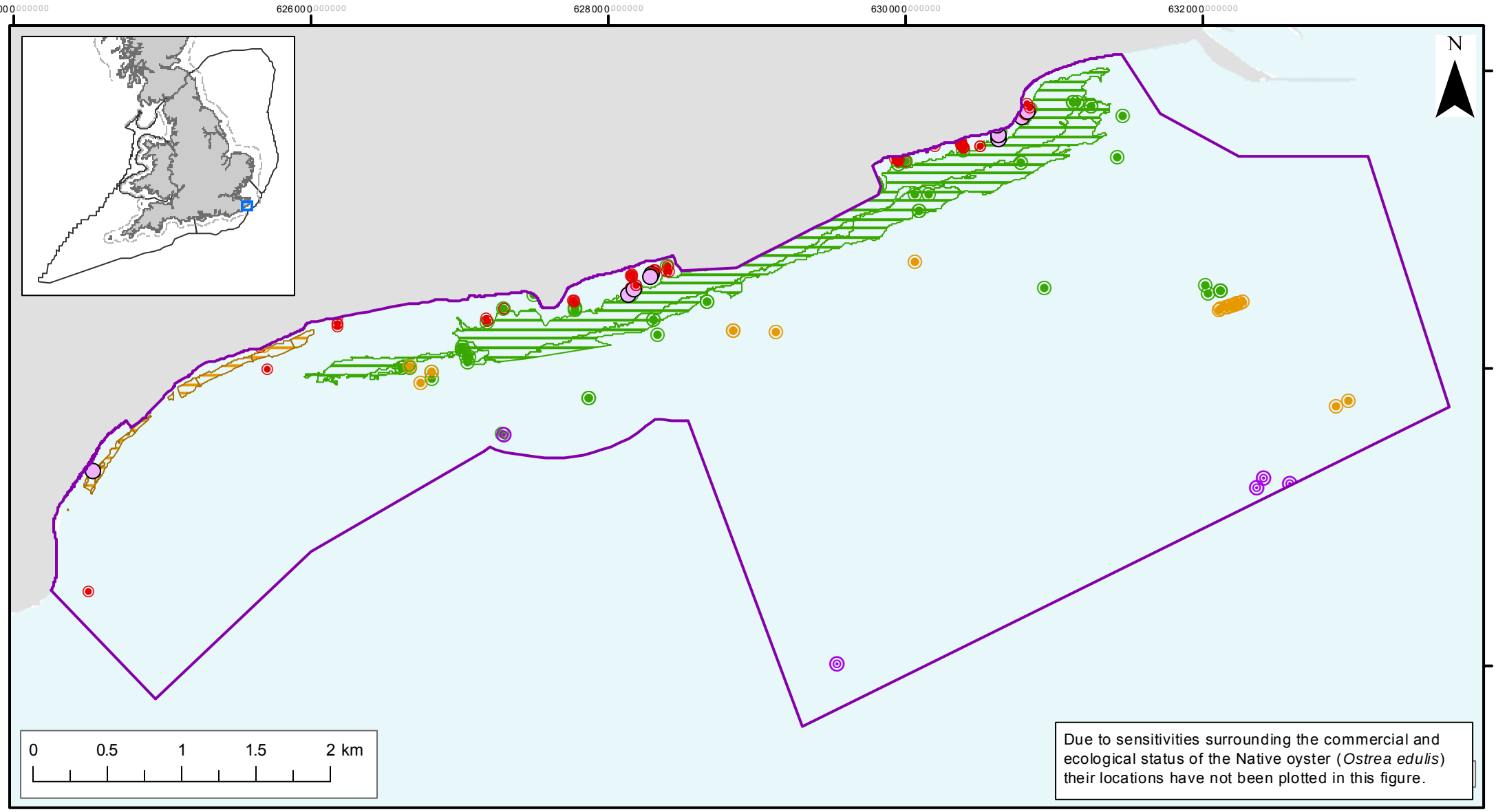
Dover to Folkestone pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- Intertidal mixed sediments (A2.4)
- Moderate energy infralittoral rock (A3.2)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Subtidal mixed sediments (A5.4)

Reference: Theme ID: 1477564
Map Projection: British National Grid



Dover to Folkestone pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Peat and clay exposures
- Subtidal chalk
- Intertidal under boulder communities
- Littoral chalk communities
- Peat and clay exposures
- Ross worm (*Sabellaria spinulosa*) reefs
- Subtidal chalk

Reference: Theme ID: 1477564
Map Projection: British National Grid

6.2.4 The Needles pMCZ

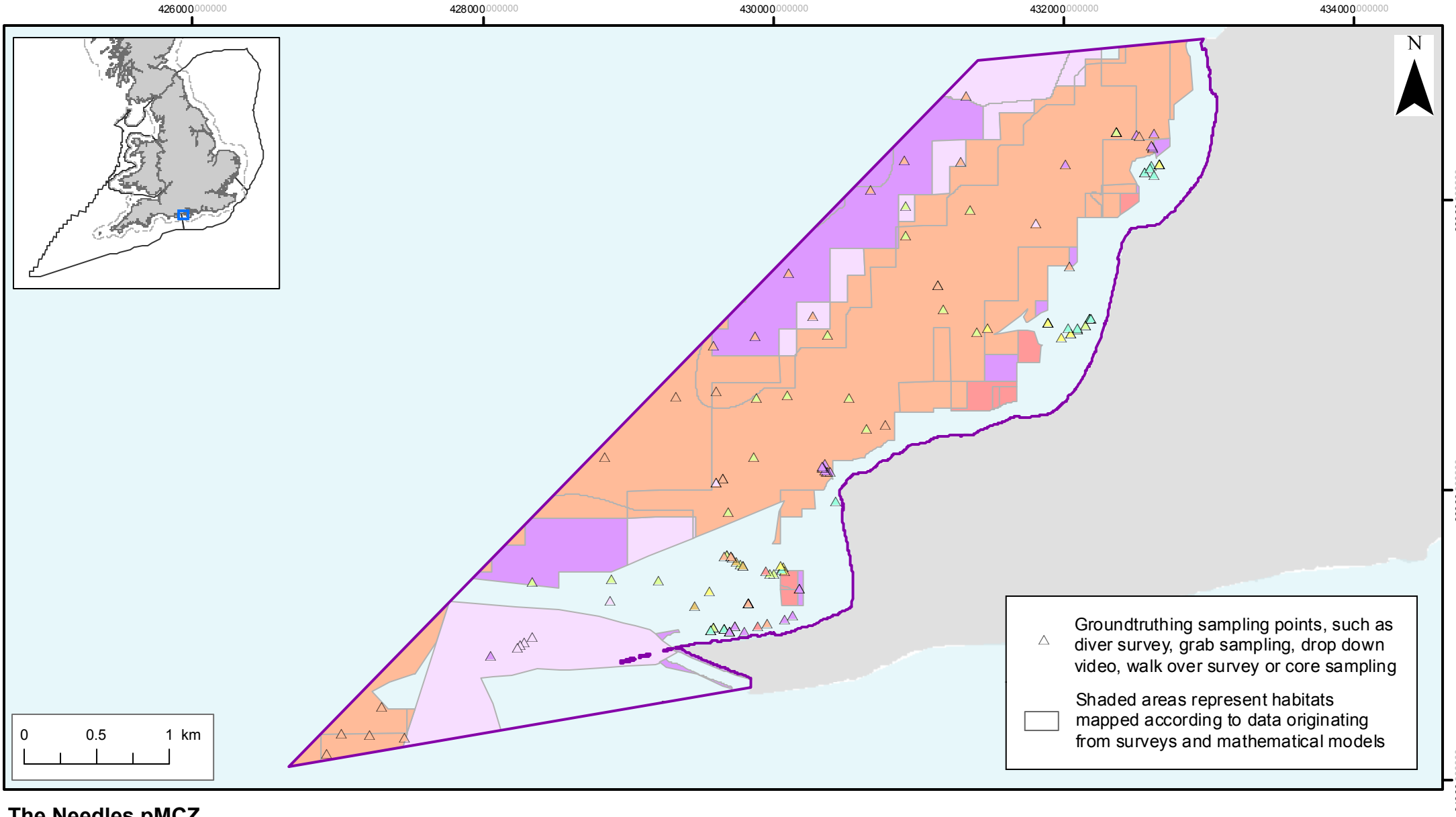
Site description

The Needles pMCZ can be found at the most westerly point of the Isle of Wight and extends northwards along the coast from just south of the Needles at Scratchells Bay up to Cliff End at the south-west of Norton Village. This site was recommended as an MCZ for a number of rare and fragile habitats including subtidal chalk, infralittoral rock and soft sediments which support communities of algae, sponges, sea squirts and delicate anemones.

Seagrass beds occur in both Totland and Colwell Bays and support species such as the colourful Sea hare, a small marine mollusc which can be found in the seagrass and surrounding soft sediments. Rare and threatened species such as the fan-shaped algae commonly known as Peacock's tail (*Padina pavonica*) can be found in the intertidal areas at Colwell Bay, and records of the tiny Stalked jellyfish (*Lucernariopsis campanulata*) have been found at Alum Bay. The site is also important for the native oyster (*Ostrea edulis*) a species which has declined in numbers across the UK in recent years.

The site is named after its most prominent landmark, The Needles – the chalk stacks which protrude from the land into the sea at the most westerly point of the Isle of Wight and which the pMCZ encompasses.

Plate 7 Moderate energy infralittoral rock habitat, copyright Lin Baldock



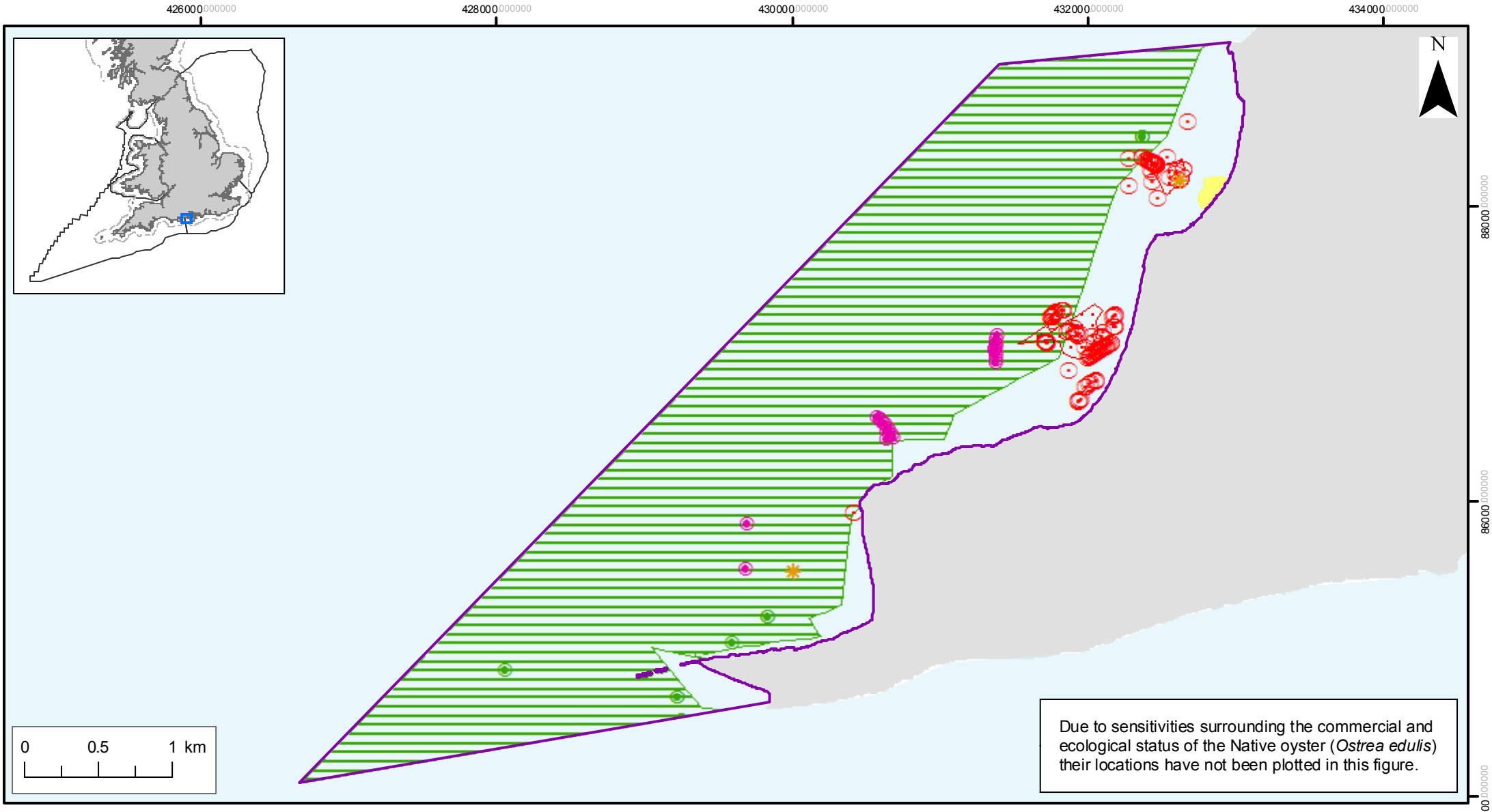
The Needles pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy infralittoral rock (A3.1)
- Moderate energy infralittoral rock (A3.2)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Subtidal mixed sediments (A5.4)
- Subtidal macrophyte-dominated sediment (A5.5)

Reference: Theme ID: 1477571
Map Projection: British National Grid



The Needles pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Seagrass beds
- Subtidal chalk
- Stalked jellyfish (*Lucernariopsis campanulata*)
- Peacock's tail (*Padina pavonica*)
- Seagrass beds
- Sheltered muddy gravels
- Subtidal chalk

Reference: Theme ID: 1477571
Map Projection: British National Grid

6.2.5 Utopia pMCZ

Site description

Utopia is an inshore site measuring 2.71km² and is located 20km east of the Isle of Wight coast. This patch of sea was recommended as an MCZ because of the fragile coral and sponge communities found here as well as the existence of several broad-scale habitats.

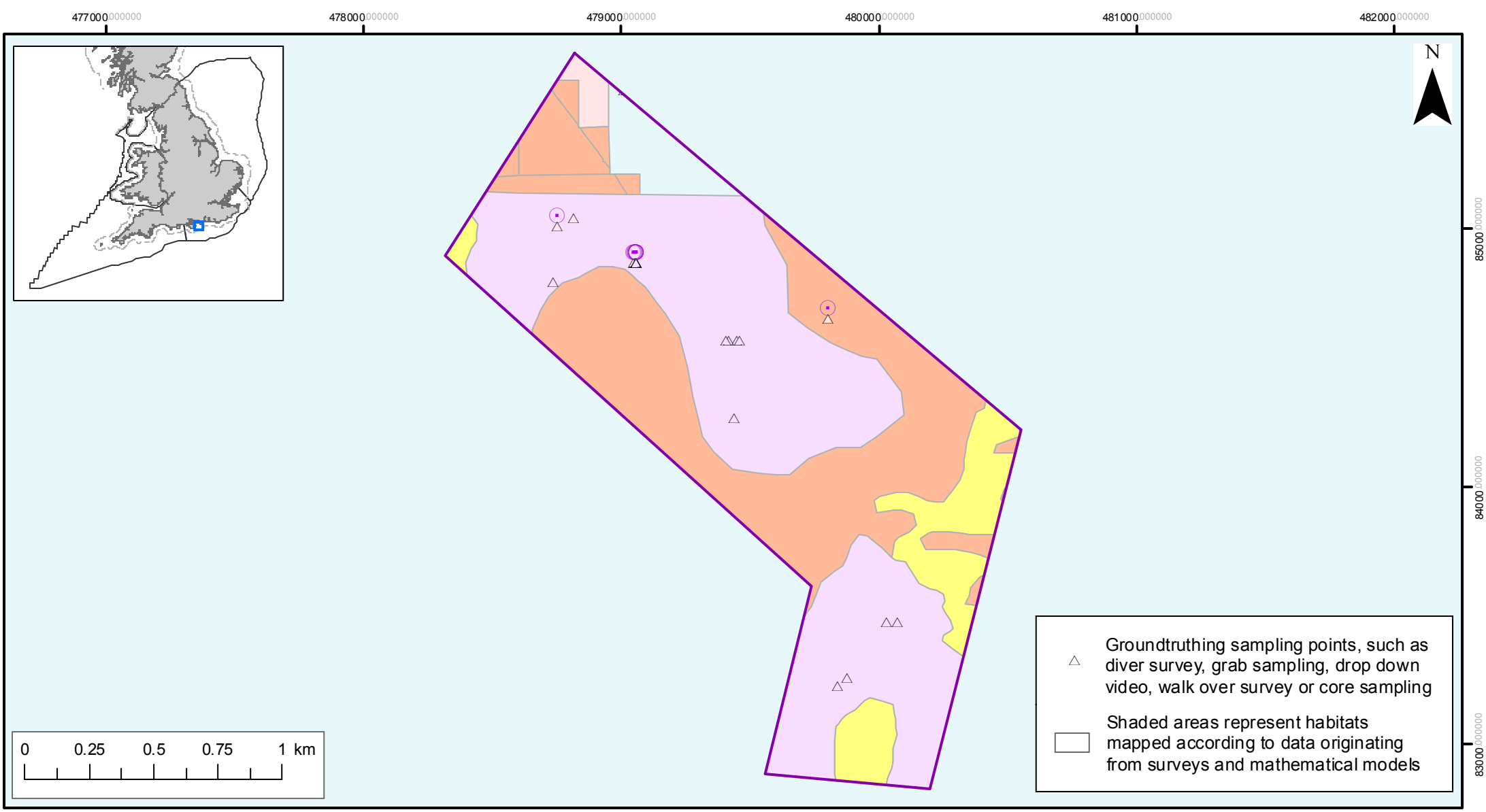
Lying beneath the sea the Utopia reef consists of an area of bedrock and large boulders that host rich communities of sponges, anthozoans, hydroids and bryozoans. The reef is surrounded by sediment consisting mainly of gravel and sand. The communities of animals that live in Utopia are dominated by large, slow-growing species such as branching sponges and ross coral, a type of bryozoan or sea-moss that has hard, crinkly 'petals' that provide hiding places for small fish, crabs and prawns.

The area was named after the tope shark as it partly makes up a pupping ground for this species.

Plate 8 Utopia Reef

Plate 9 Utopia Reef

Both Plates 8 and 9 are from surveys undertaken by the aggregates industry (Tarmac Marine Dredging and Kendal Brothers) and are in the paper, 'Proposal to Balanced Seas RSG for an Extension to rMCZ 28 – Utopia', Hampshire and Isle of Wight Wildlife Trust 18 April 2011.



Utopia pMCZ

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mixed sediments (A5.4)
- Fragile sponge and anthozoan communities on subtidal rocky habitats

Reference: Theme ID: 1477578
Map Projection: British National Grid

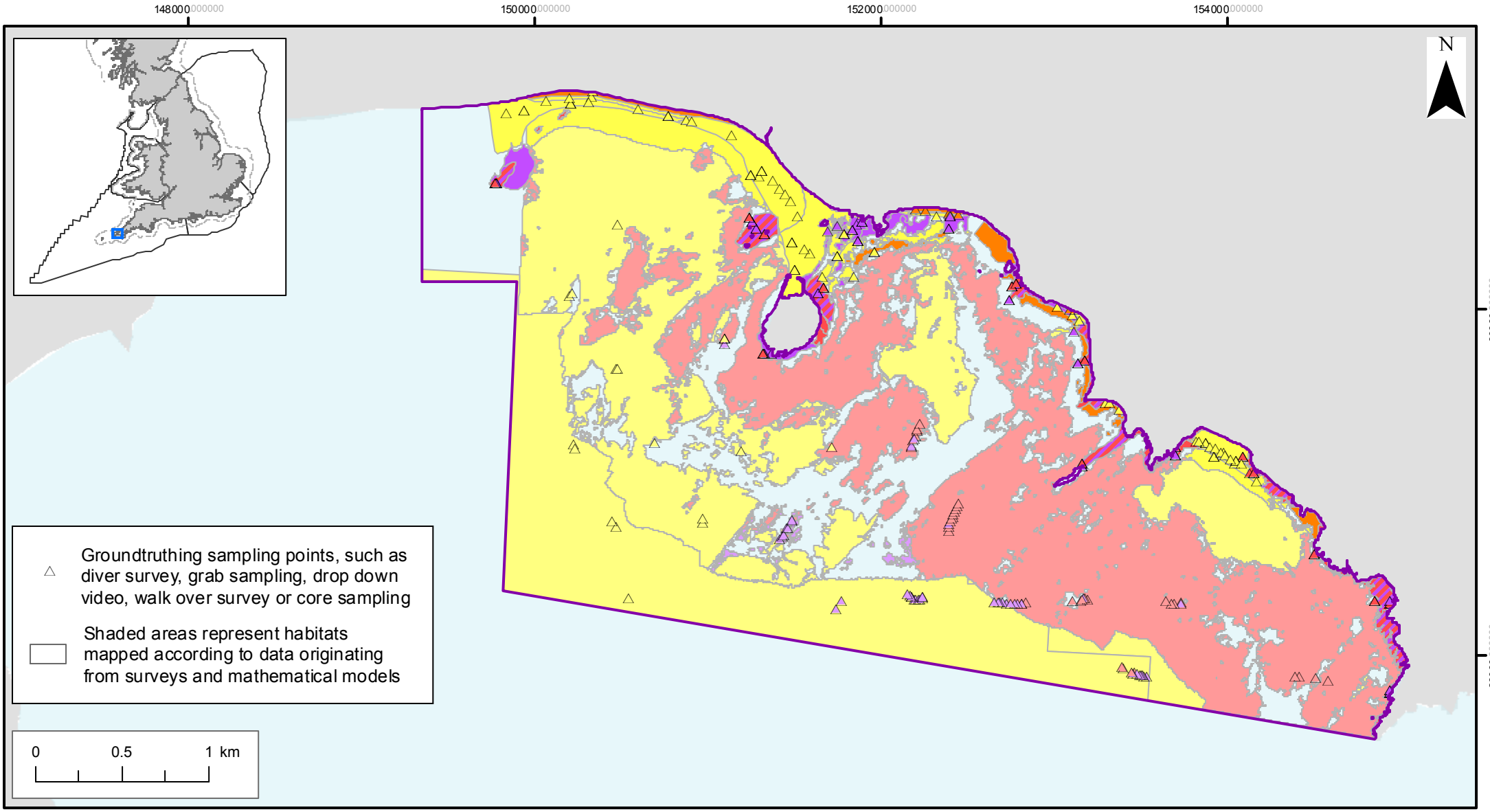
6.2.6 Mounts Bay pMCZ

Site description

Mount's Bay pMCZ is centred on the village of Marazion, approximately three miles east of Penzance, and includes the area around the iconic tidal island of St. Michael's Mount. The site contains a range of intertidal and subtidal habitats including areas of sand and soft sediments, rocky habitat with different levels of wave exposure and seagrass beds in more sheltered areas.

This diversity of habitats leads to a wide diversity of plant and animal species which can be found within the site including dense kelp forests, seagrass beds, worms and bivalves living in soft sediments, and rocky shores covered in sea snails, anemones, crabs, sponges and sea squirts. The site is notable for seagrass and stalked jellyfish. Seagrass is a flowering plant which serves several important ecological functions. These include stabilising sediments and preventing erosion, as well as providing a food source for water birds, shelter and nursery areas for a range of species such as cuttlefish and juvenile fish. Stalked jellyfish are small relations of true jellyfish and sea anemones which typically spend their life attached to seaweed or seagrass. Three stalked jellyfish species have been recorded here, all of which are proposed for protection, and the site is of particular importance for the species *Lucernariopsis campanulata* within the region. The site is also home to the giant goby, a protected species of fish, and areas within the site are thought to serve important nursery functions for species of sharks, sea trout and other commercially caught shellfish and fish species.

Plate 10 Seaweeds and limpets on intertidal rock, Rob Seebold



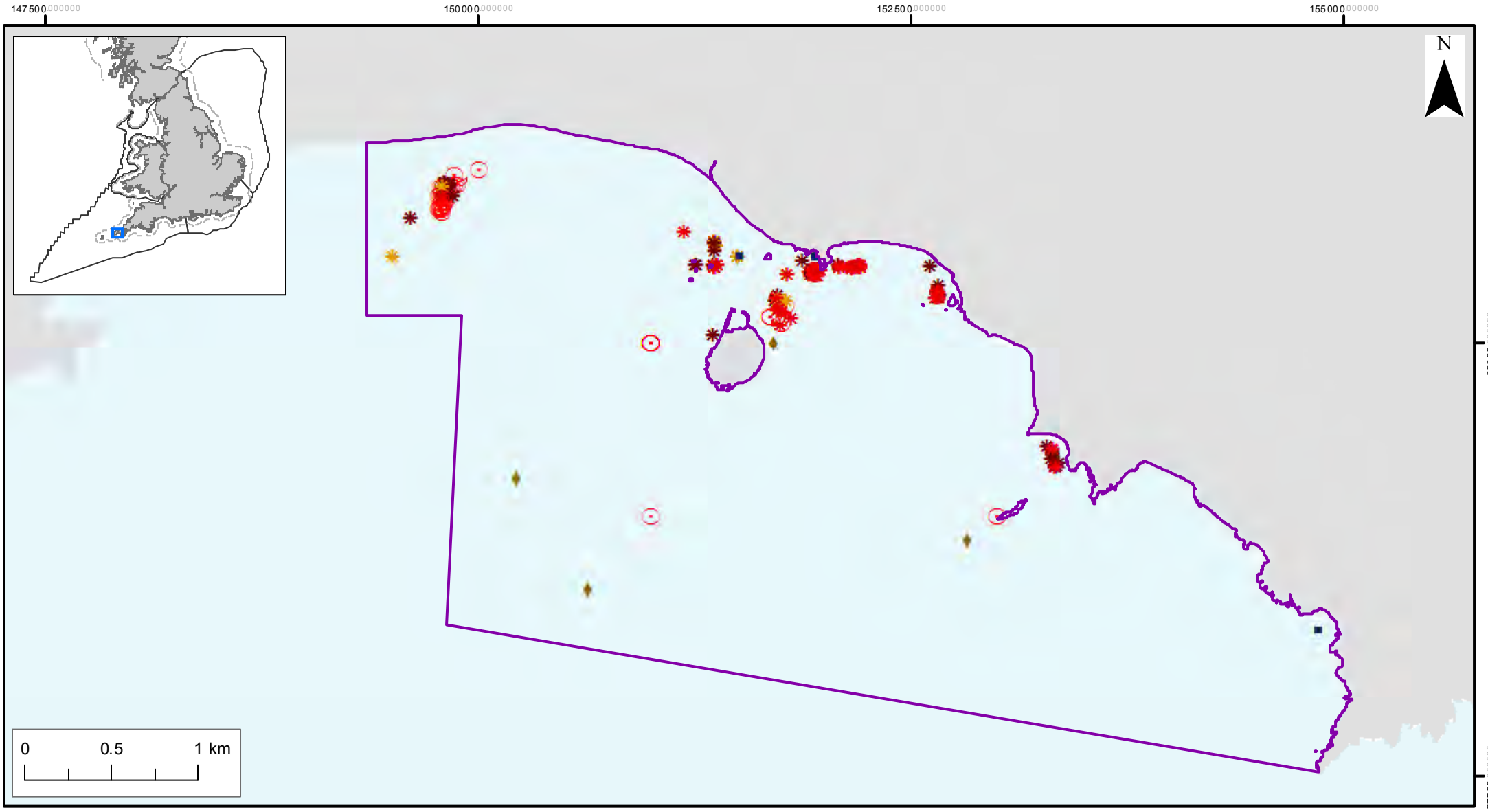
Mounts Bay pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- High/Moderate energy intertidal rock (A1.1/A1.2)
- Moderate energy intertidal rock (A1.2)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- High energy infralittoral rock (A3.1)
- Moderate energy infralittoral rock (A3.2)
- Subtidal sand (A5.2)

Reference: Theme ID: 1477654
Map Projection: British National Grid



Mounts Bay pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Seagrass beds
- Seagrass beds
- Ocean quahog (*Arctica islandica*)
- Giant goby (*Gobius cobitis*)
- Stalked jellyfish (*Haliclystus sp.*)
- Stalked jellyfish (*Lucernariopsis cruxmelitensis*)
- Stalked jellyfish (*Lucernariopsis campanulata*)

Reference: Theme ID: 1477654
Map Projection: British National Grid

6.2.7 Runnelstone (Land's End) pMCZ

Site description

Runnelstone (Land's End) pMCZ covers a coastal and inshore area centred on the Runnelstone reef, a series of granite pinnacles that are carpeted in animal and plant life. The site is in an area of higher than average species diversity. The site's position at the end of the Land's End peninsula exposes it to the full force of the Atlantic, creating excellent examples of very exposed rocky shore communities.

Upper shores are dominated by barnacles, limpets and winkles. Lower shores are carpeted with the pink tufted coralline alga *Corallina officinalis* and overlain with the kelp *Alaria esculenta.* Beneath the surface a dense kelp forest is found, home to a wide variety of animal and algal species. Below this animal turf, communities take over; there are walls of anemones, corals, sponges and hydroids all taking advantage of the food delivered by the site's strong currents. In areas of greater depth or more sheltered from the waves, pink sea-fans *Eunicella verrucosa* (rare cold water corals) can be found in amongst the animal turf. Surrounding the rocks both on the shore and below the surface are vast sandy habitats.

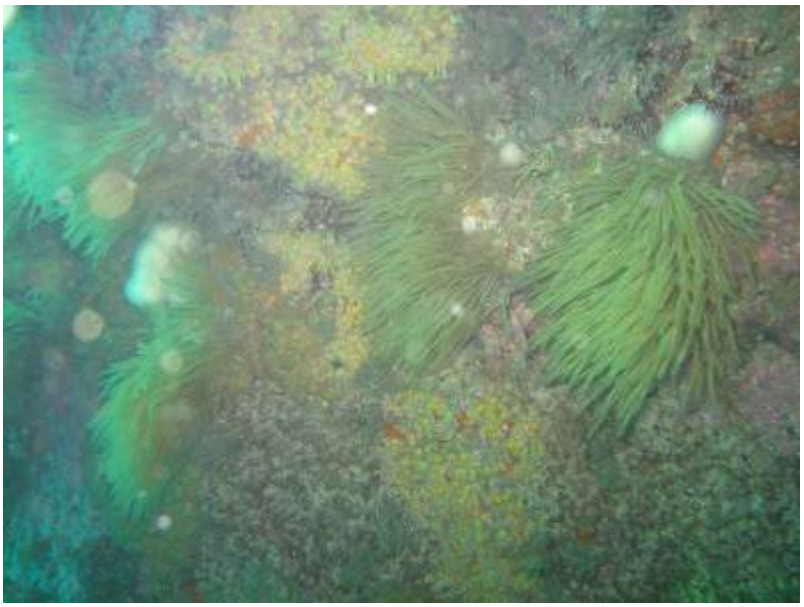
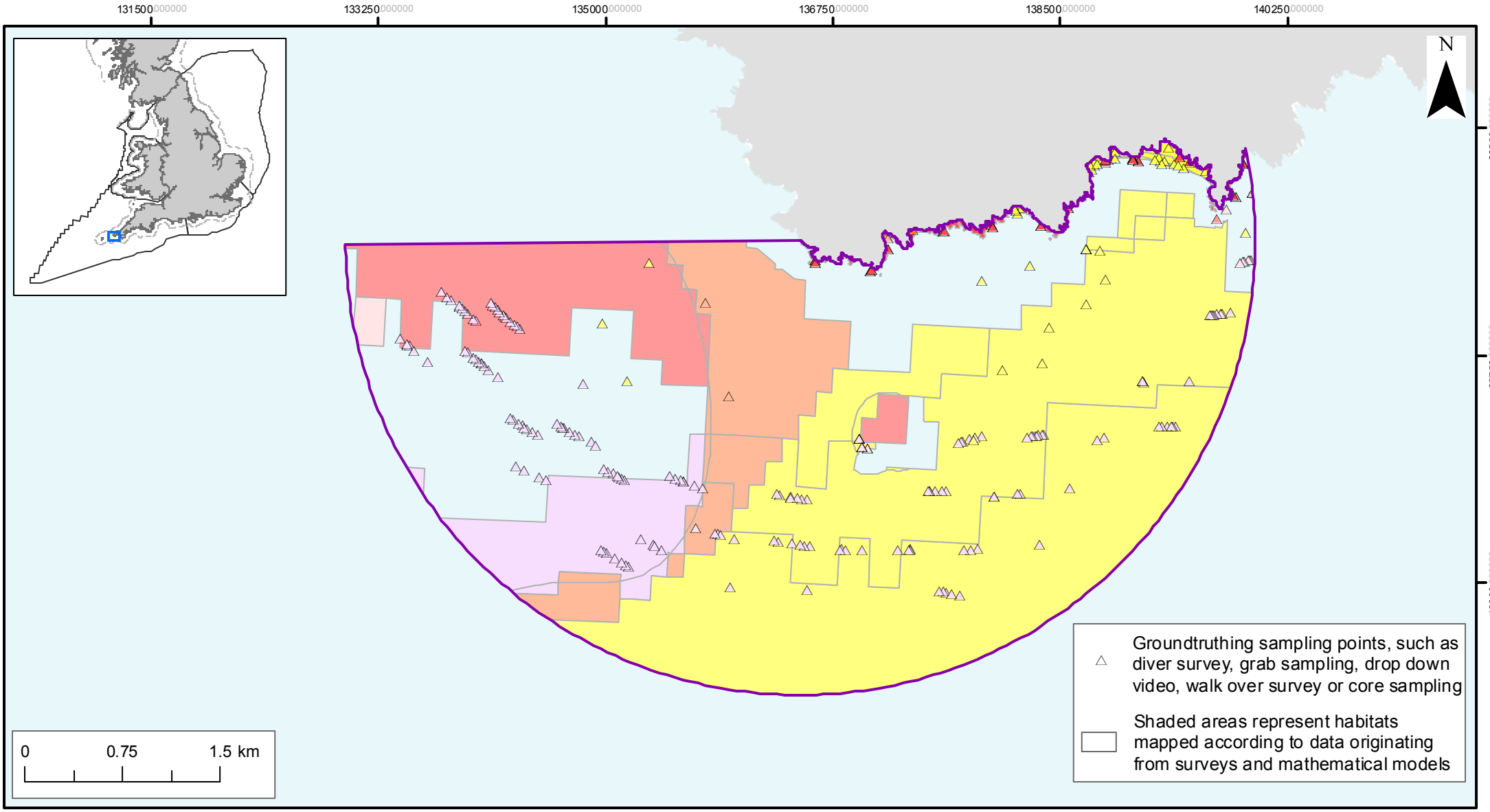


Plate 11 Anemone gardens, Runnelstone Reef, copyright Cat Wildling

Plate 12 Porthcurno Beach, Land's End Peninsula, copyright Kate Sugar



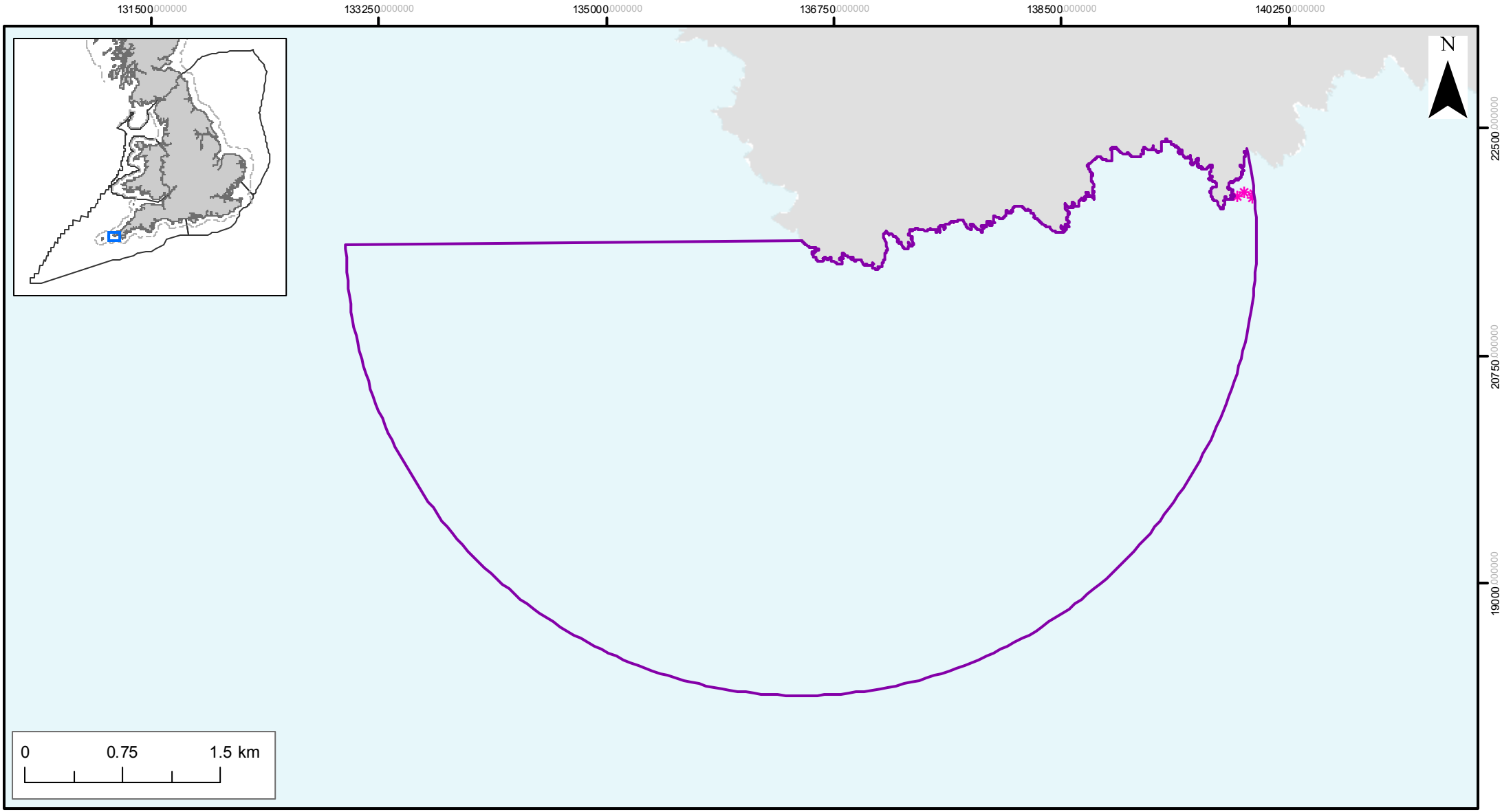
Runnell Stone (Land's End) pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- High energy infralittoral rock (A3.1)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)

Reference: Theme ID: 1477655
Map Projection: British National Grid



Runnel Stone (Land's End) pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Pink sea-fan (*Eunicella verrucosa*)

Reference: Theme ID: 1477655
Map Projection: British National Grid

6.2.8 Newquay and The Gannel pMCZ

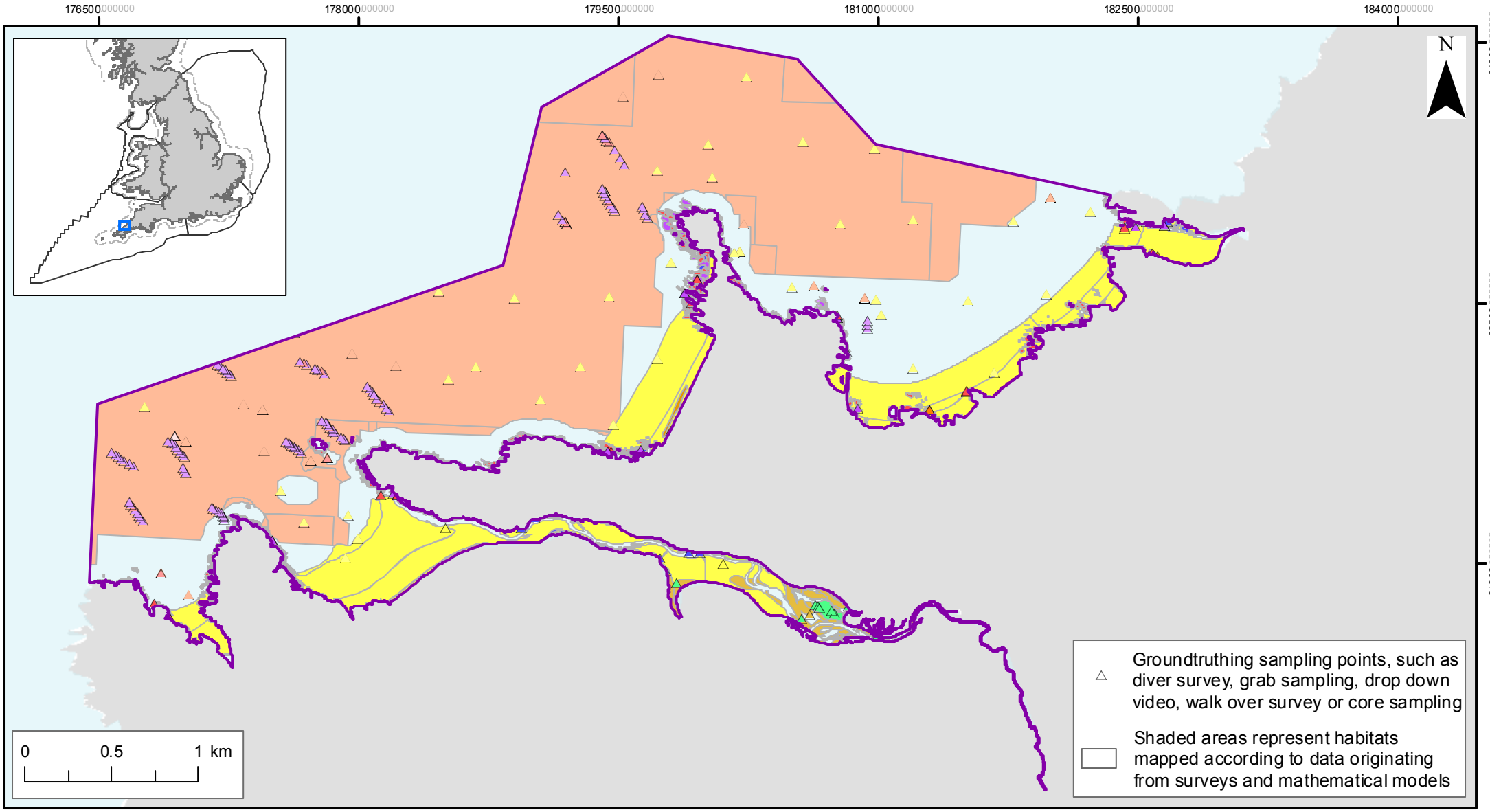
Site description

Newquay and The Gannel pMCZ is found on the north Cornwall coast, around the fishing harbour and popular resort town of Newquay. The site encompasses the beaches around Newquay, extending along the high water mark from Kelsey Head (west of Crantock Beach) to Trevelgue Head at Porth Beach, as well as the estuary area of the Gannel (as far inland as the tidal limit).

The site has been proposed for protection as an MCZ partly to protect the wide range of intertidal habitats found in the area – from exposed sandy beaches and diverse rocky shores, home to important species such as the giant goby, to the more sheltered, low energy rock, mud and saltmarsh habitats found in the estuary area of the Gannel. Estuaries are of recognised importance in terms of their productivity, and their ecological function as nursery areas for various species. Offshore the seaward boundary of the site extends roughly one km, covering areas of subtidal sediment and biologically rich rocky reef habitats.

Plate 13 Newquay coastline, Hazel Selley

Plate 14 The Gannel estuary, Hazel Selley



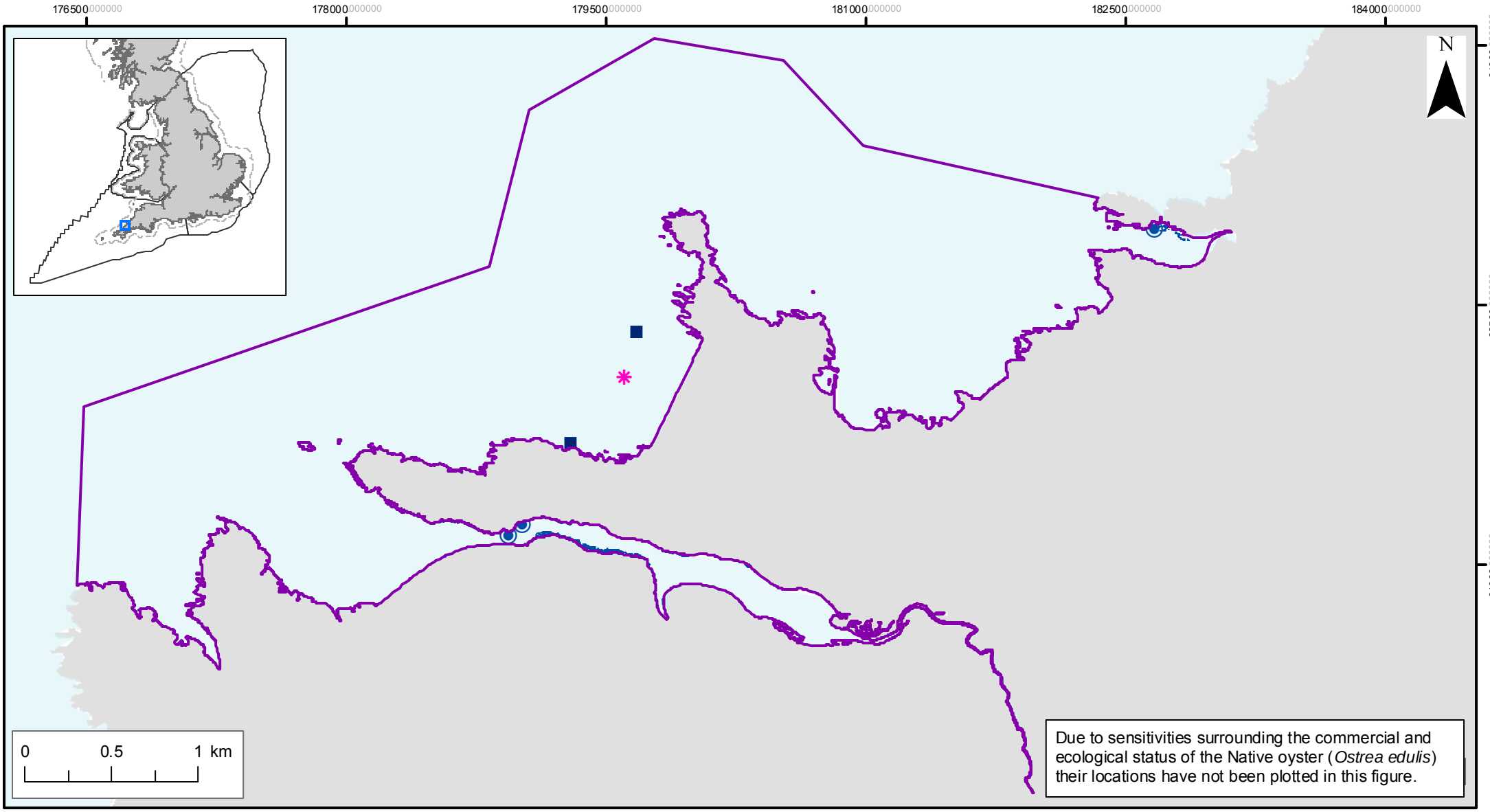
Newquay and The Gannel pMCZ Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- High/Moderate energy intertidal rock (A1.1/A1.2)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (2.1)
- Intertidal sand and muddy sand (A2.2)
- Intertidal mud (A2.3)
- Intertidal mixed sediments (A2.4)
- Coastal saltmarshes and saline reedbeds (A2.5)
- High energy infralittoral rock (A3.1)
- Moderate energy infralittoral rock (A3.2)
- High energy circalittoral rock (A4.1)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)

Reference: Theme ID: 1477658
Map Projection: British National Grid



Newquay and The Gannel pMCZ Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Estuarine rocky habitats
- Estuarine rocky habitats
- Pink sea-fan (*Eunicella verrucosa*)
- Giant goby (*Gobius cobitis*)

Reference: Theme ID: 1477658
Map Projection: British National Grid

6.2.9 Hartland Point to Tintagel pMCZ

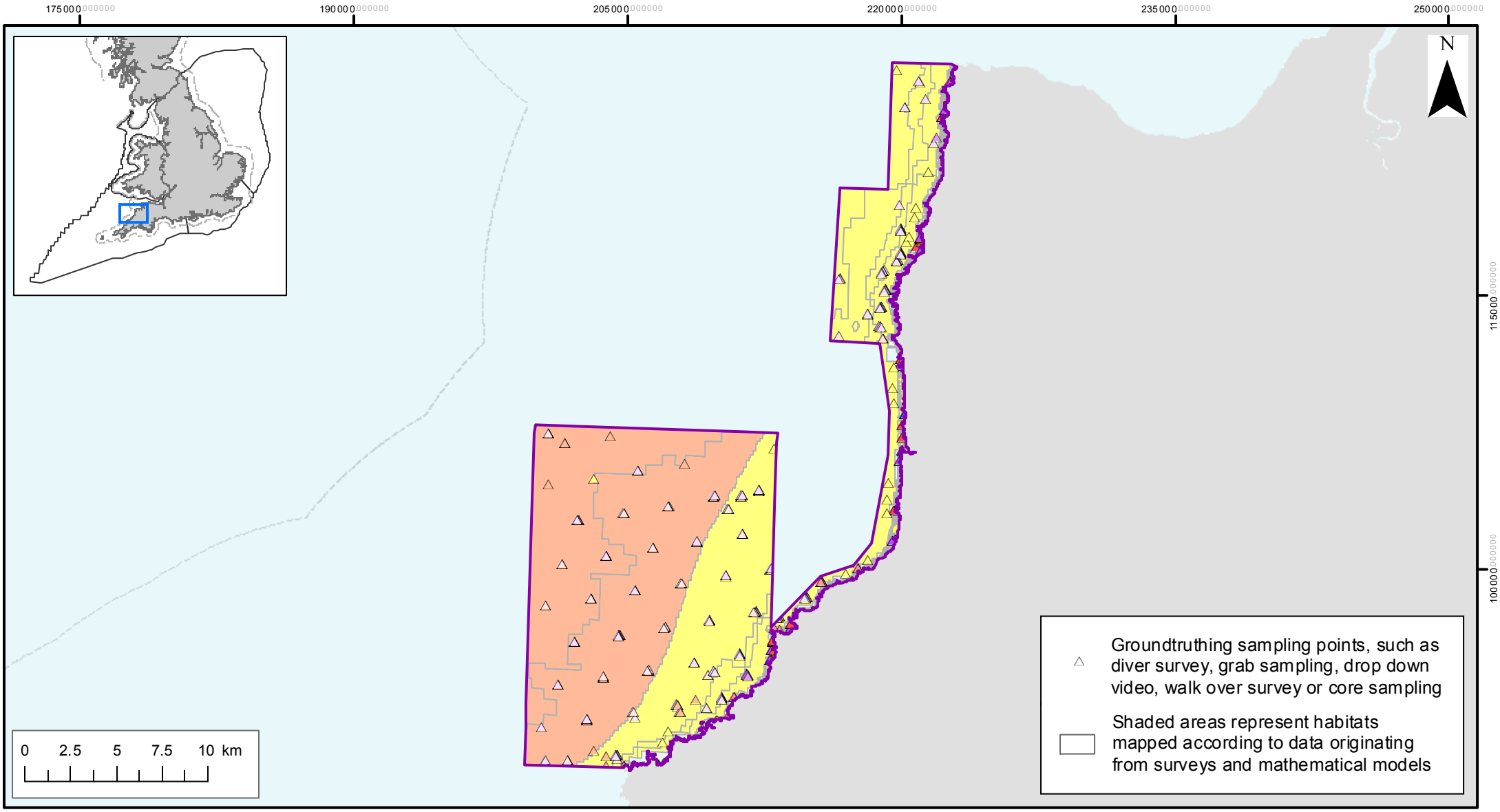
Site description

Hartland Point to Tintagel pMCZ covers an area of 304km² and extends from the shore line to depths of approximately 50 metres. The site boundary follows the coastline from Hartland Point in Devon southwards to Tintagel Head in Cornwall. It is made up of three distinct areas exposed to high levels of wave energy, and is characterised by steep rocky cliffs and stretches of sandy surf beaches.

The pMCZ intersects with an area of higher than average benthic habitats and species diversity. It is being proposed for a wide range of features that include 14 Broad Scale Habitats, two Habitats of Conservation Importance and one Species of Conservation Importance which are important at a regional and national scale. The site contributes the largest area of three intertidal habitats in the region, and is crucial for connectivity along the North Coast of Devon and Cornwall. The site contains exceptional colonies of Honeycomb worm reefs (*Sabellaria alveolata*). This site's reef-building tubeworm populations are considered to be one of the finest in Britain. The rare pink sea-fan coral (*Eunicella verrucosa*) can also be found within the site.

Plate 15 Honeycomb worm reefs (*Sabellaria alveolata*) at Widemouth beach, Llucia Mascorda, Natural England

Plate 16 High energy rock beach from Hartland Point, Llucia Mascorda, Natural England



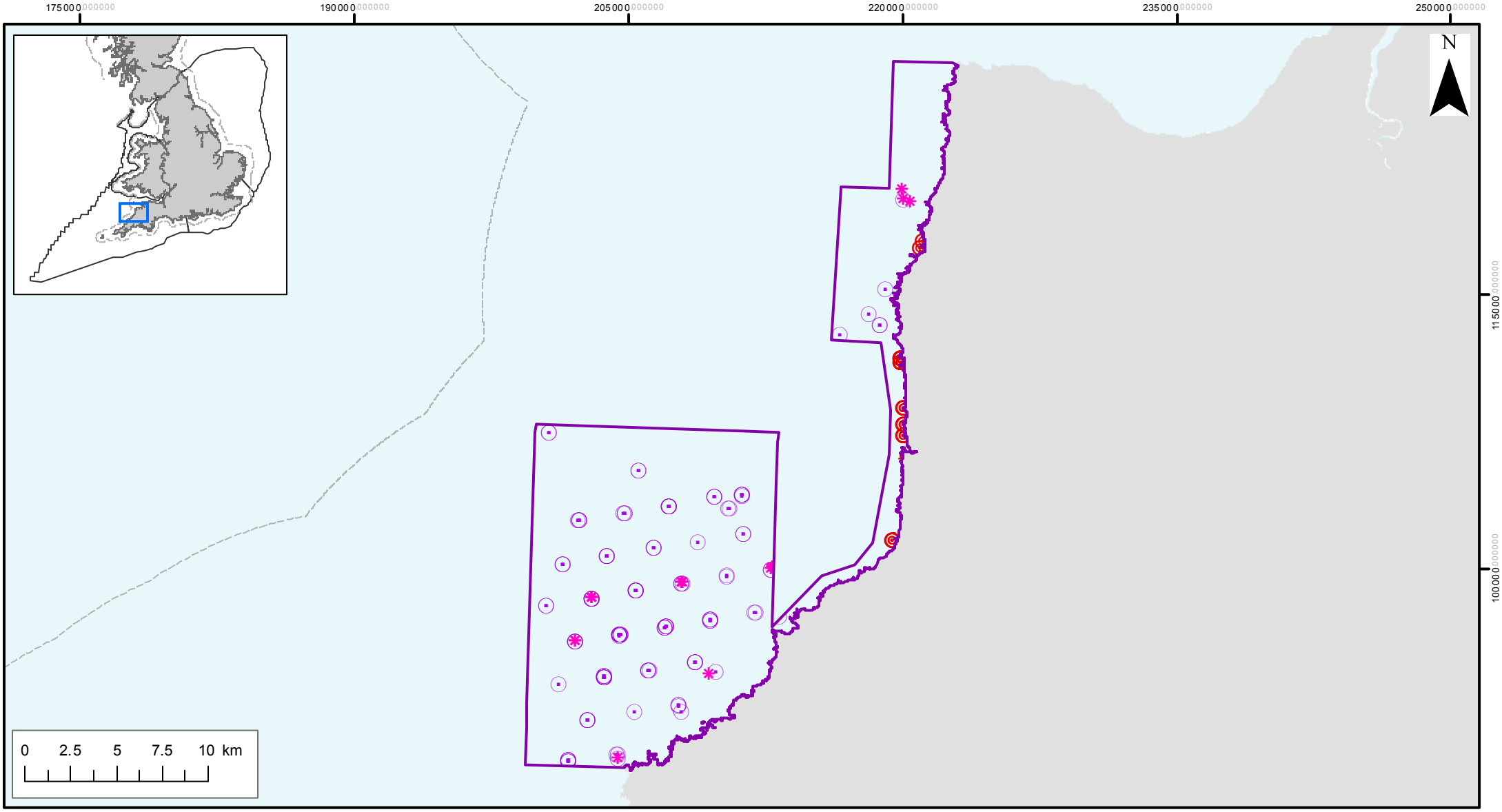
Hartland Point to Tintagel pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- Coastal saltmarshes and saline reedbeds (A2.5)
- High energy infralittoral rock (A3.1)
- Moderate energy infralittoral rock (A3.2)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)

Reference: Theme ID: 1477663
Map Projection: British National Grid



Hartland Point to Tintagel pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Honeycomb worm (*Sabellaria alveolata*) reefs
- Fragile sponge and anthozoan communities on subtidal rocky habitats
- Honeycomb worm (*Sabellaria alveolata*) reefs
- Pink sea-fan (*Eunicella verrucosa*)

Reference: Theme ID: 1477663
Map Projection: British National Grid

6.2.10 Bideford to Foreland Point pMCZ

Site description

Bideford to Foreland Point pMCZ is an inshore site located on the north Devon coast. The boundary extends from Mermaid's Pool at Westward Ho! to Foreland Point on the Exmoor Coast. An area of approximately 104km² is protected.

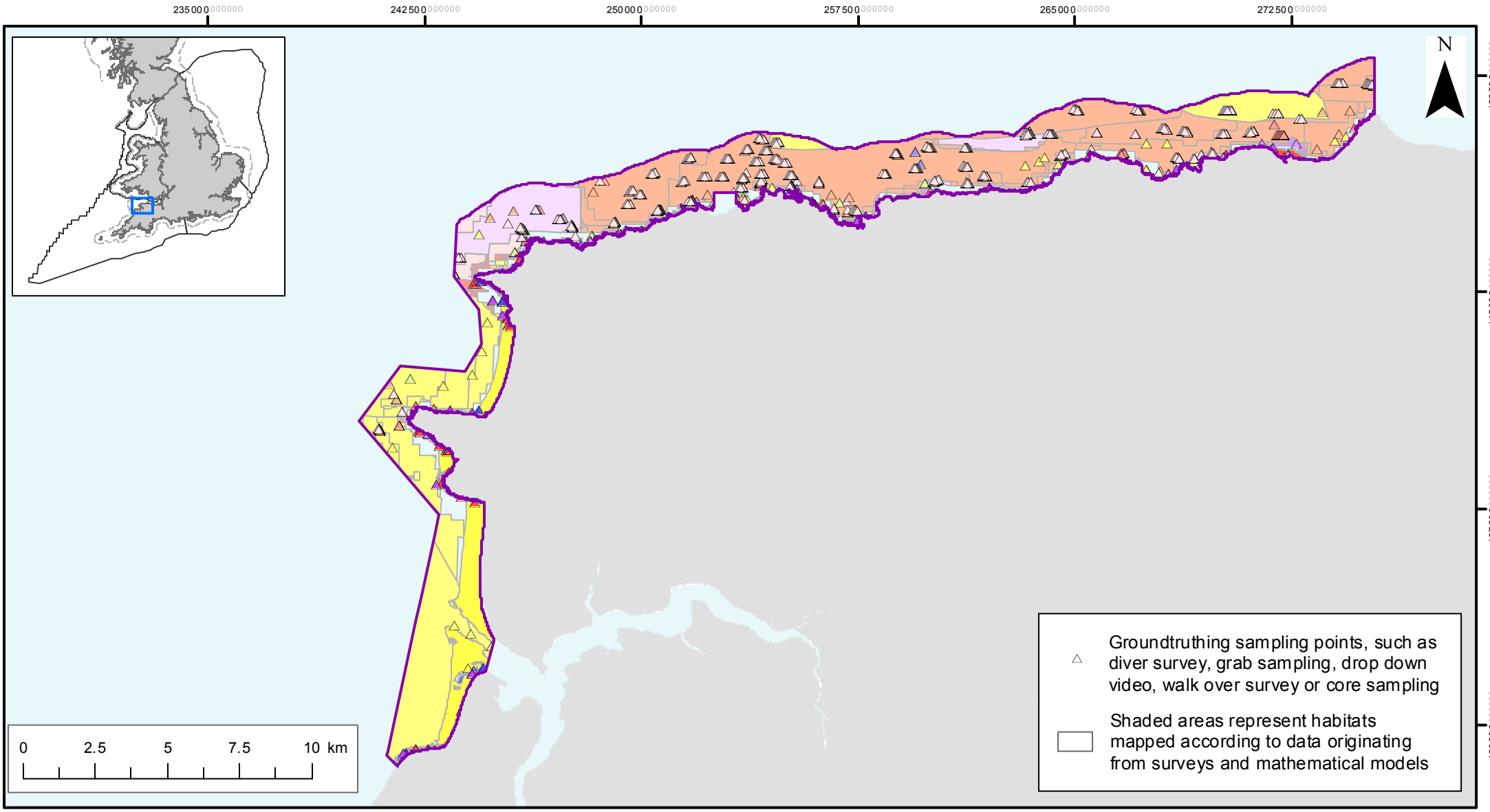
This pMCZ covers a range of habitats from the intertidal beaches to the subtidal sediments found up to depths of 36 metres. The site follows the coastline from Westward Ho! to Foreland Point and is characterised by cliffs and rocky shores, with small sandy bays and inlets. One exception is Bideford Bay, an expanse of sandy shoreline backed by extensive sand dunes at the mouth of the Taw Torridge estuary system. The other exception is the sandy shoreline and sand dunes of the Woolacombe beaches.

The site covers a wide range of features that include 14 Broad Scale Habitats, five Habitats of Conservation Importance and two Species of Conservation Importance.

The beaches at Woolacombe are known to include rocky shore communities adjacent to sand characterised by solitary and small colonies of the honeycomb worm (*Sabellaria alveolata*). The rare pink sea-fan (*Eunicella verrucosa*) can be found within the subtidal zone, a soft coral with intricate branches made up of colonies of tiny anemone-like polyps. Pink sea-fans are slow growing and vulnerable to damage. Spiny lobster (*Palinurus elephas*), a large, brightly coloured crustacean that can grow up to 60cm long, can be found within the site. Spiny lobsters were once an important commercial species, but they now require protection due to a declining population around the south-west.

Plate 17 Woolacombe Beach – High energy intertidal rock

Plate 18 Lynmouth – Low energy intertidal rock



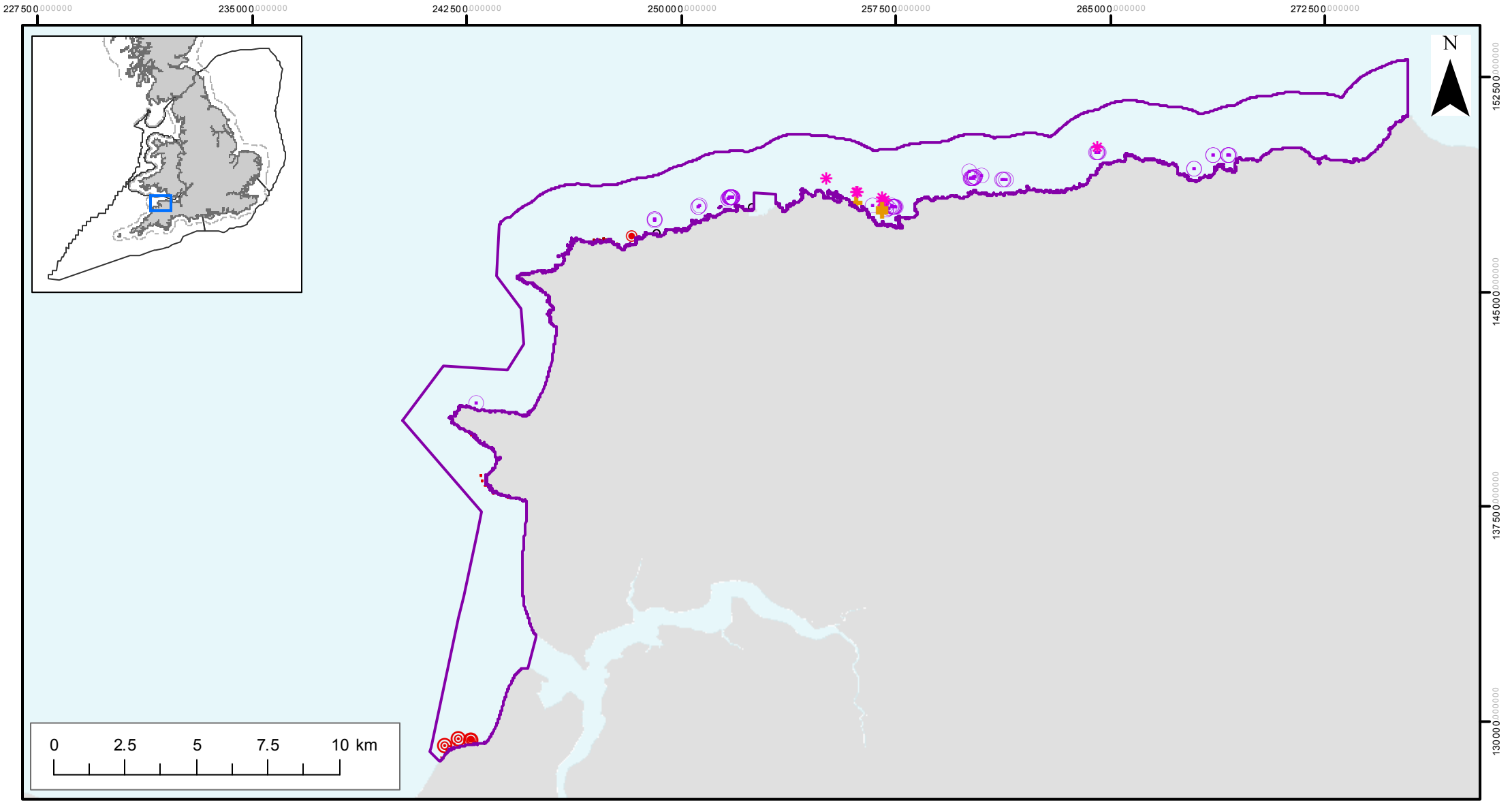
Bideford to Foreland Point pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- Intertidal mixed sediments (A2.4)
- High energy infralittoral rock (A3.1)
- Moderate energy infralittoral rock (A3.2)
- Low energy infralittoral rock (A3.3)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mixed sediments (A5.4)

Reference: Theme ID: 1477666
Map Projection: British National Grid



Bideford to Foreland Point pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Honeycomb worm (*Sabellaria alveolata*) reefs
- Littoral chalk communities
- Pink sea-fan (*Eunicella verrucosa*)
- Spiny lobster (*Palinurus elephas*)
- Fragile sponge and anthozoan communities on subtidal rocky habitats
- Honeycomb worm (*Sabellaria alveolata*) reefs
- Intertidal under boulder communities
- Littoral chalk communities

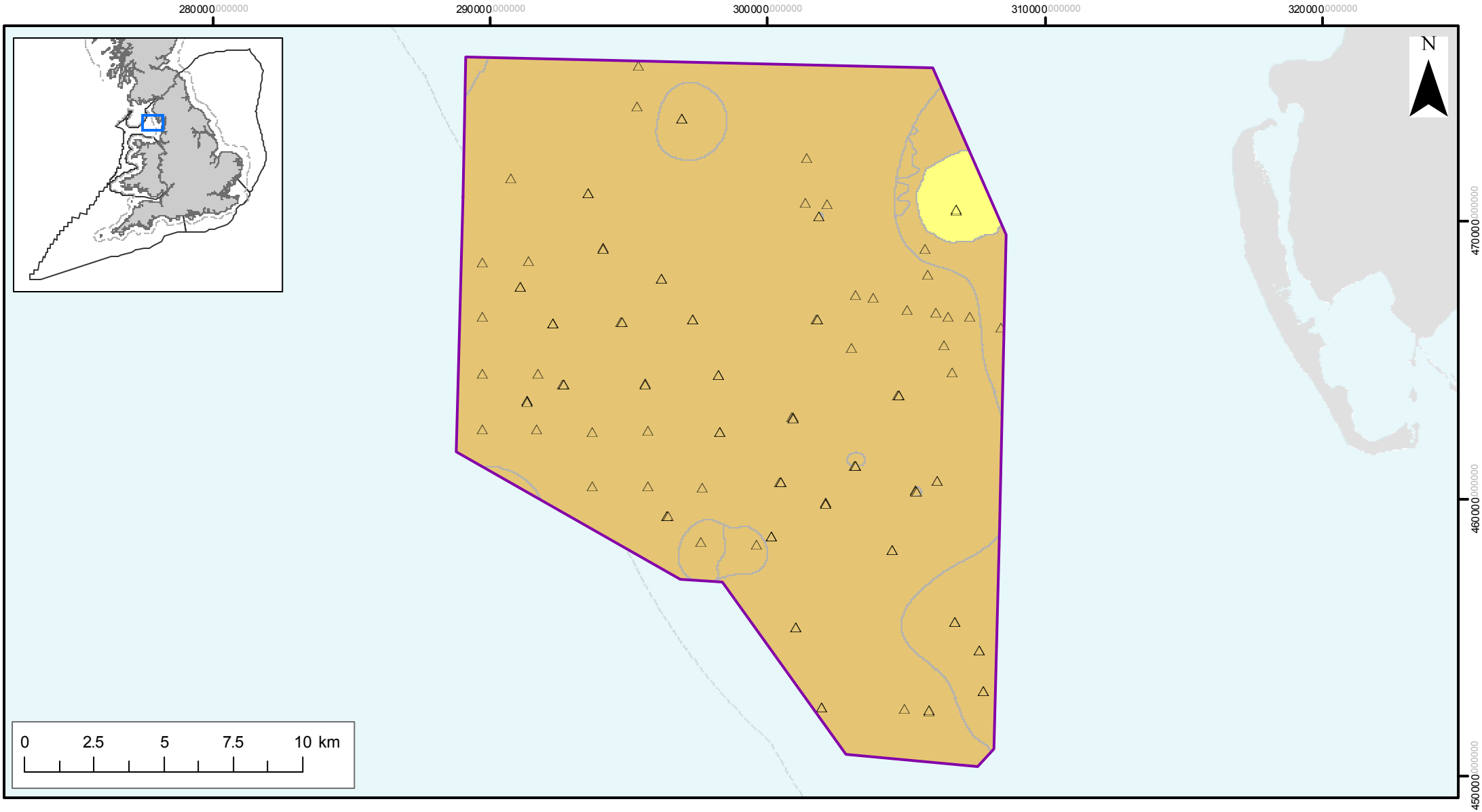
Reference: Theme ID: 1477666
Map Projection: British National Grid

6.2.11 West of Walney pMCZ

Site description

West of Walney can be found about 8km west of Walney Island. This area of seabed has been proposed as an MCZ because of its subtidal mud and sand habitats and the communities they support. Under the waves the site is home to Dublin Bay prawn (also known as Norway lobster, but best known for its culinary uses as langoustine or scampi) and a host of other animals. Burrowing sea urchins hide beneath the surface of the sediment. Luminescent sea pens look plant-like with their branching structure, but they are animals that can move, becoming streamlined in currents, or retracting into their burrows when disturbed. Strange looking spoon worms, also known as mud volcano worms, create volcano-like mounds of mud, through the top of which they protrude a long green proboscis to feed. West of Walney is partially co-located with a collection of four wind farms: Walney 1 and 2, Ormonde and Walney Extension. Collectively, these make one of the world's largest offshore wind farm areas.

Plate 19 Sea pen



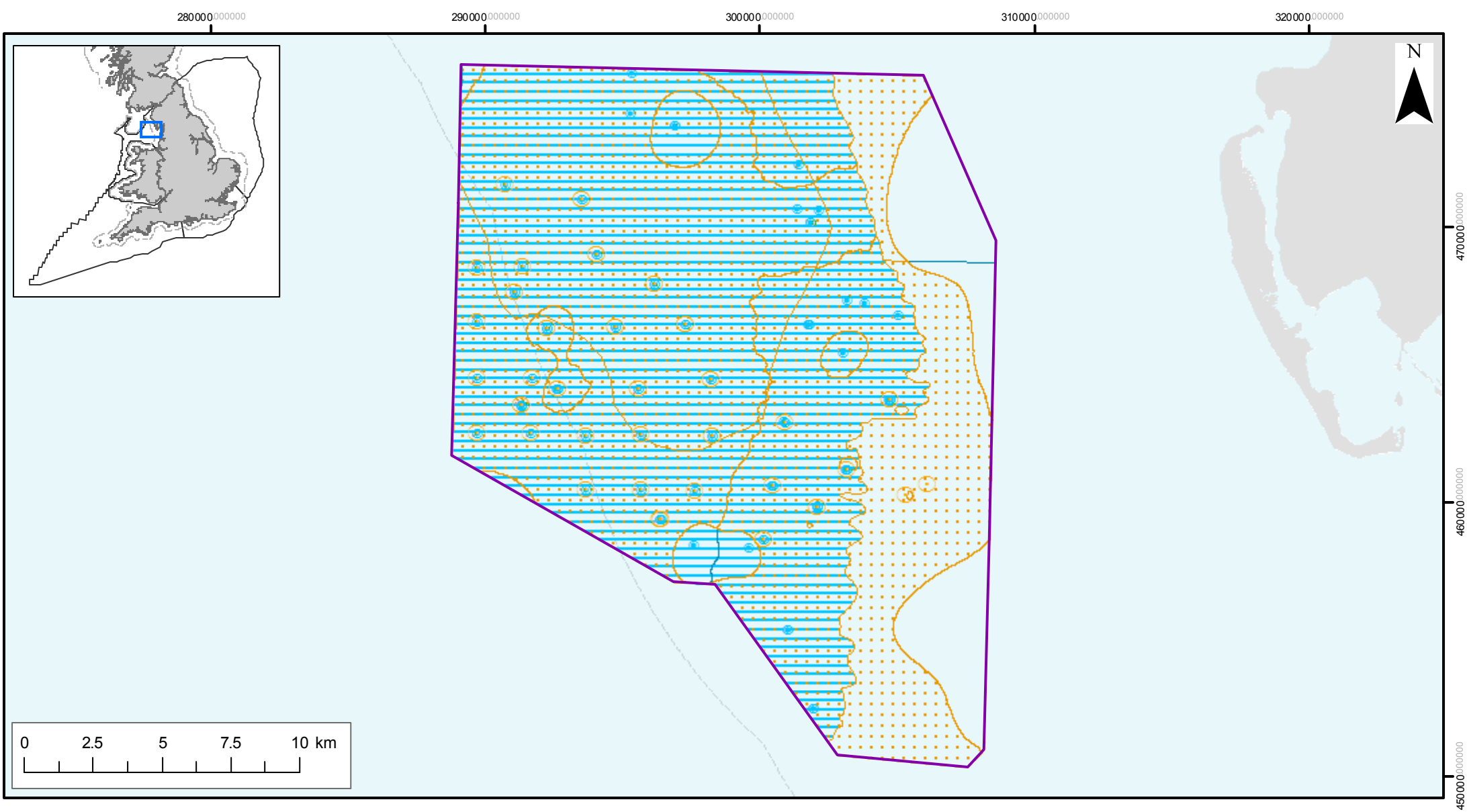
West of Walney pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling
- Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

Reference: Theme ID: 1477725
Map Projection: British National Grid



West of Walney pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Mud habitats in deep water
- Sea pens and burrowing megafauna
- Mud habitats in deep water
- Sea pens and burrowing megafauna

Reference: Theme ID: 1477725
Map Projection: British National Grid

6.2.12 Allonby Bay pMCZ

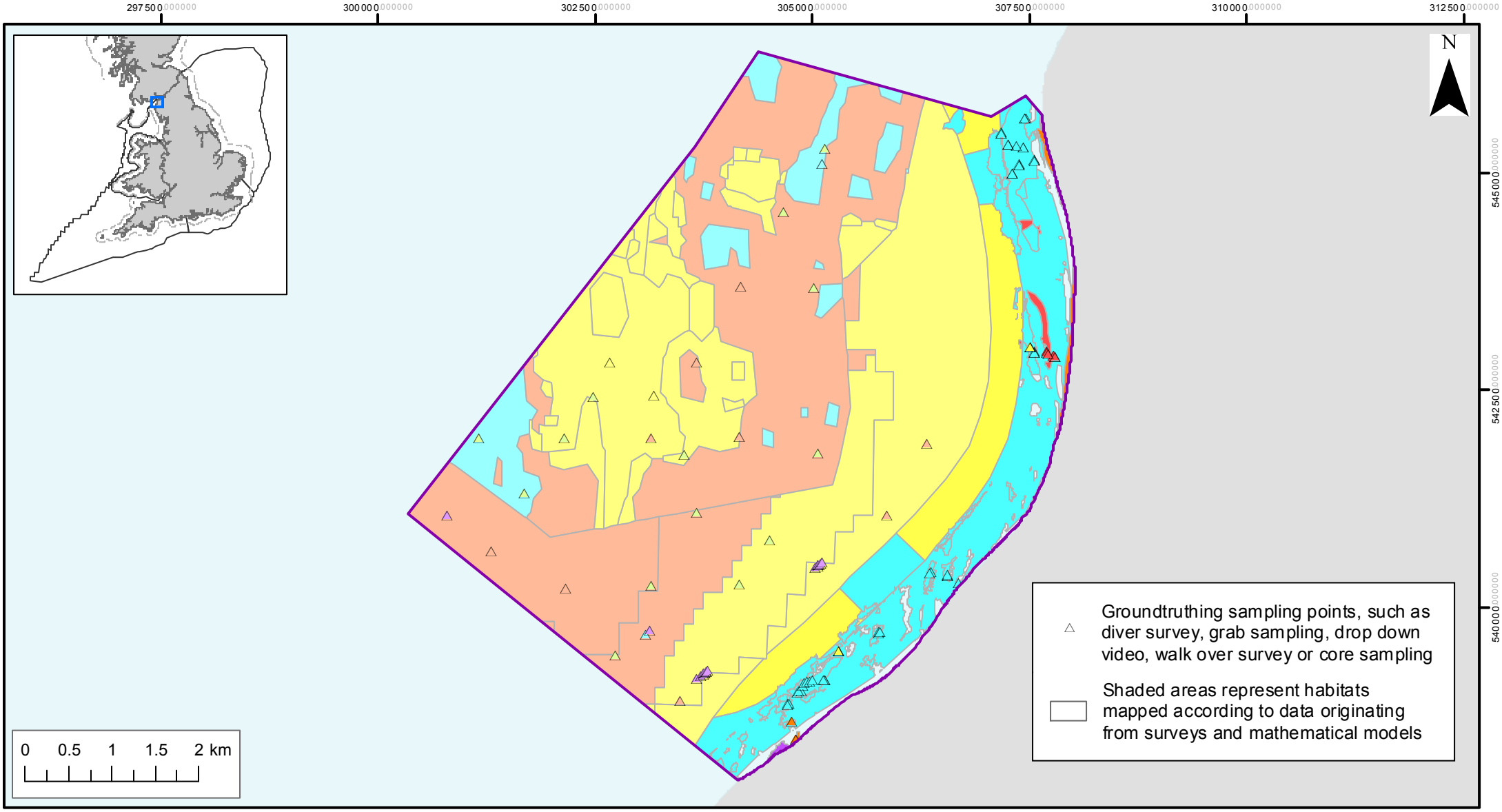
Site description

Allonby Bay pMCZ is an inshore site that stretches for approximately 9km along the coast on the English side of the Solway Firth. It extends from Dubmill Point in the north to just north of Maryport in the south. The total area of the site is approximately 39km^2. This stretch of coast was recommended as an MCZ because of the diverse range of marine habitats and species it supports. In particular, this includes large areas of nationally important living reefs, formed by the honeycomb worm (*Sabellaria alveolata*) and blue mussel (*Mytilus edulis*) beds.

The honeycomb worm reefs are formed from the closely packed sand tubes constructed by these colonial worms. The reef structures resemble honeycomb and can extend for tens of metres across and up to a metre tall. In an otherwise ever-changing environment, these reefs are able to support a wide range of other shore dwelling species including anemones, snails, shore crabs and seaweeds. Honeycomb worm reefs need rock to build on as well as a steady supply of sand for tube building. This makes north-west England an ideal place for this species and Allonby Bay supports some of the best examples of these reefs in the UK.

The peat exposures provide a habitat which piddocks, a type of burrowing clam, and other species can tunnel into.

Plate 20 Honeycomb worm reef at Dubmill Point



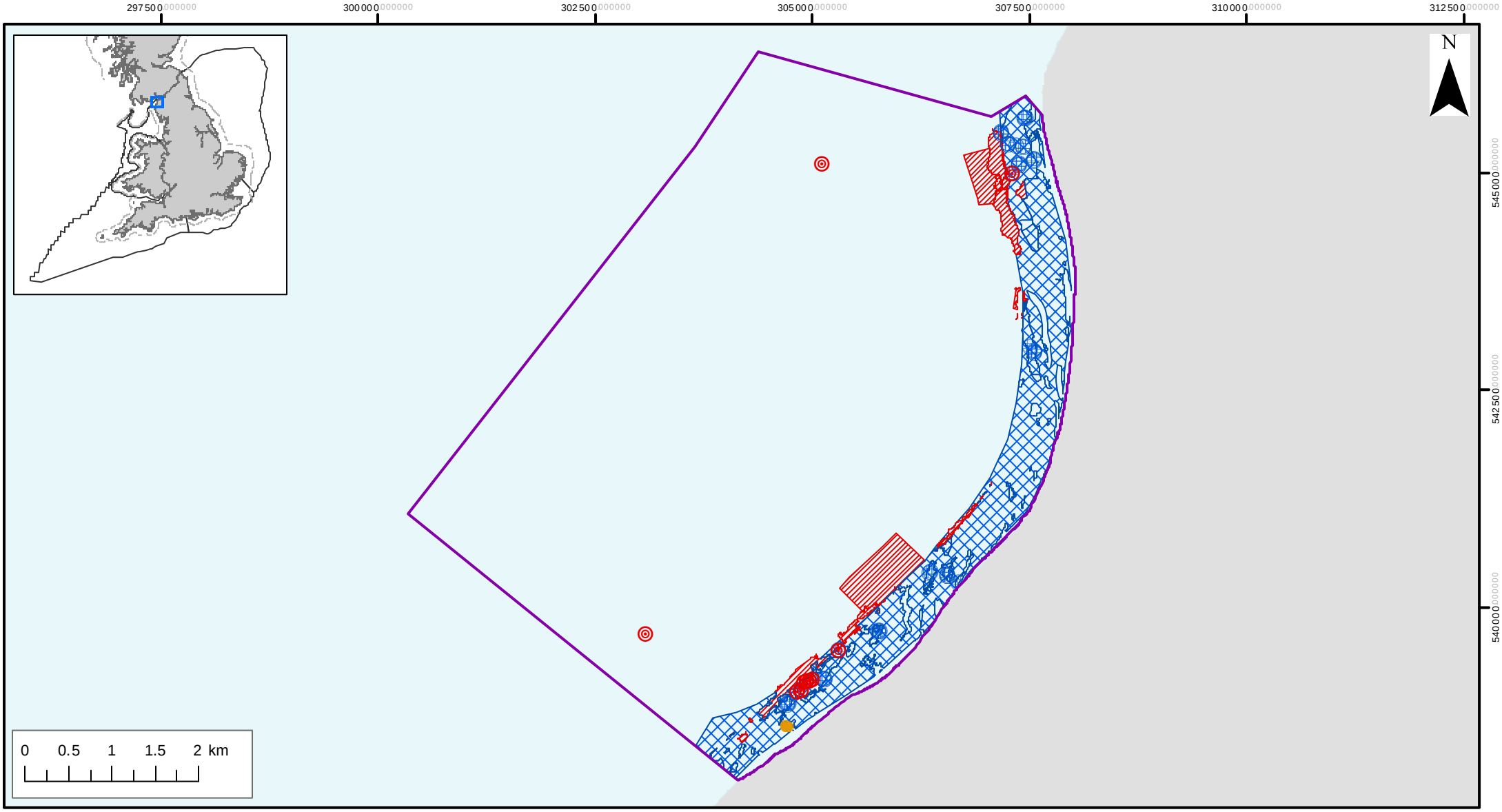
Allonby Bay pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- Intertidal biogenic reefs (A2.7)
- Moderate energy infralittoral rock (A3.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mixed sediments (A5.4)
- Subtidal biogenic reefs (A5.6)

Reference: Theme ID: 1475909
Map Projection: British National Grid



Allonby Bay pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nM Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Blue Mussel Beds
- Honeycomb worm (*Sabellaria alveolata*) reefs
- Peat and clay exposures

- Blue Mussel Beds
- Honeycomb worm (*Sabellaria alveolata*) reefs
- Peat and clay exposures

Reference: Theme ID: 1475909
Map Projection: British National Grid

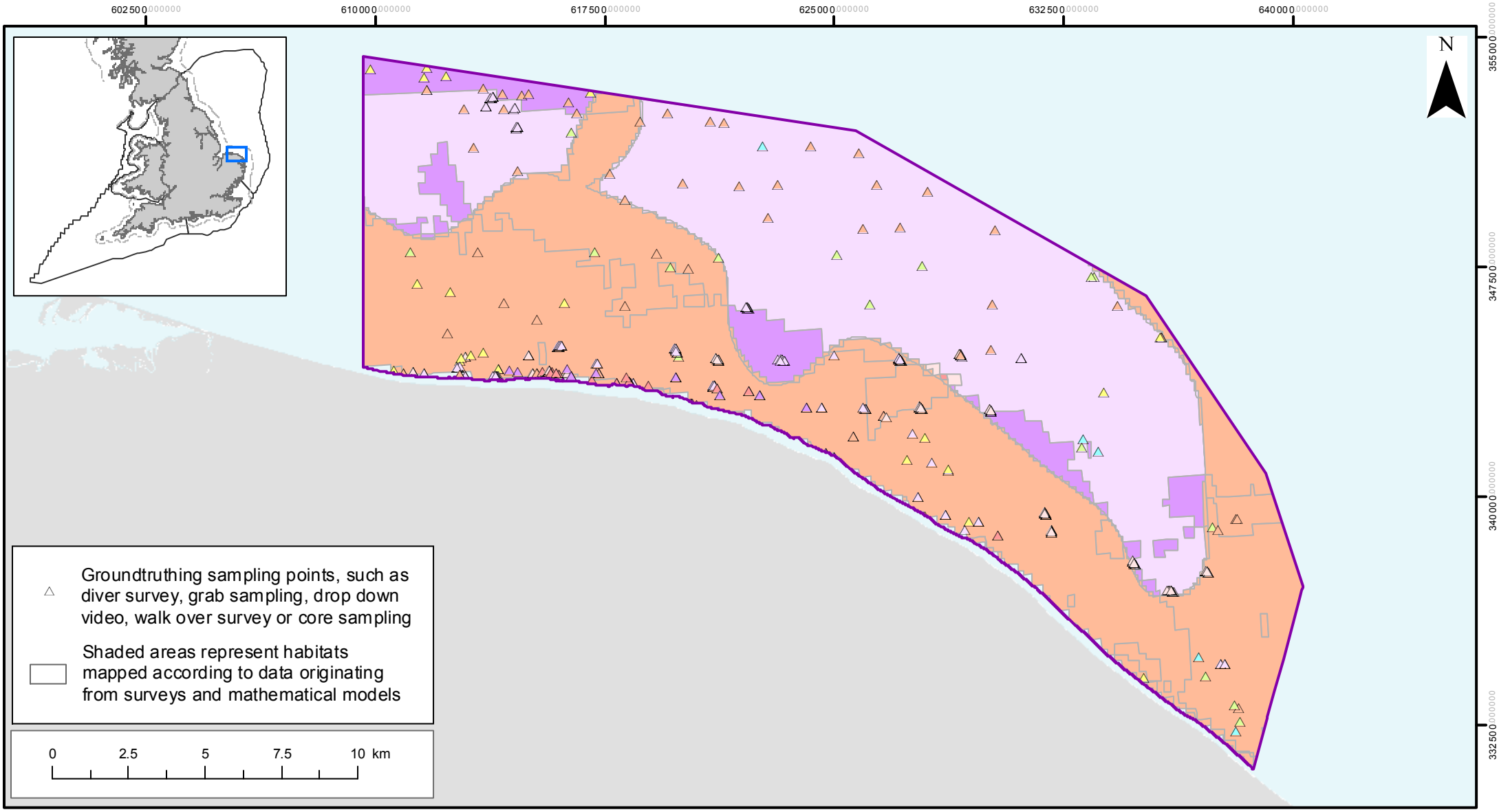
6.2.13 Cromer Shoal Chalk Beds pMCZ

Site description

Cromer Shoal Chalk Beds pMCZ is located just 200 metres from the shore of the beautiful North Norfolk Coast. It begins just west of Weybourne and ends at Happisborough, extending around 10km out to sea and covering an area of 320km^2. It has a maximum depth of about 20 metres and its unique features are visible in the shallows with a mask and snorkel in favourable conditions.

These features consist of soft chalk, rock and clay communities amongst sand and mixed sediments, displayed as a colourful garden of seaweeds. Within a wider area that is predominantly sandy, the chalk beds provide stable surfaces for seaweeds and static animals to settle on and grow. The beds support nursery areas for juveniles of species as well as being important in the food chain for higher animals such as tompot blennies and even the small-spotted catshark, which has been seen on occasion. The chalk beds are inhabited by soft bodied and tentacled animals with small fish, lobsters and crabs inhabiting the crevices and holes. The area supports the small-scale crab and lobster fishery vital to the character and economy of the area. Other common species include sponges, starfish, sea squirts, hermit crabs and pipefish (related to the seahorse).

Plate 21 Chalk arch within Cromer Shoal Chalk Beds pMCZ, copyright Rob Spray



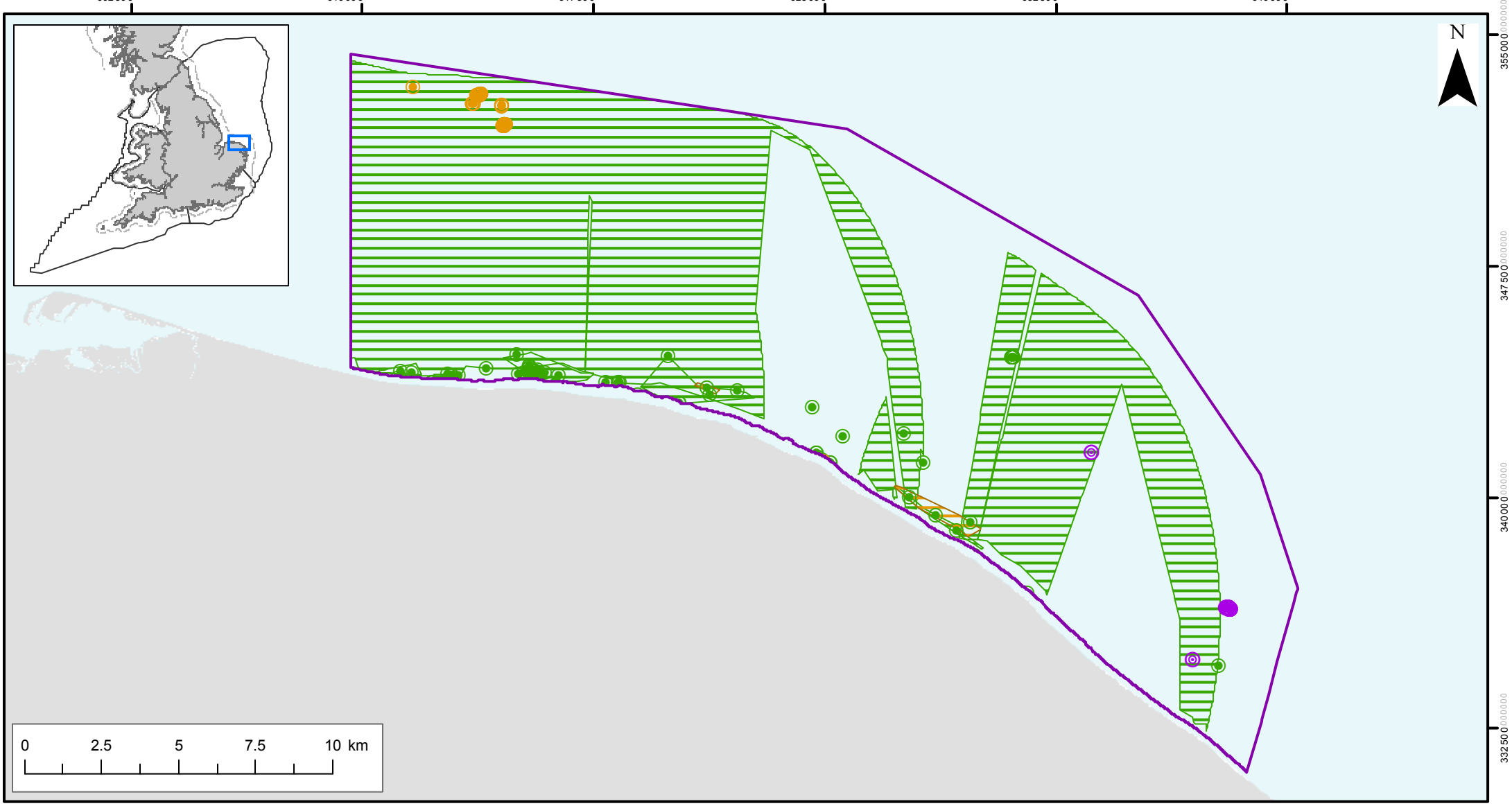
Cromer Shoal Chalk Beds pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy infralittoral rock (A3.1)
- Moderate energy infralittoral rock (A3.2)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mixed sediments (A5.4)
- Subtidal biogenic reefs (A5.6)

Reference: Theme ID: 1477590
Map Projection: British National Grid



Cromer Shoal Chalk Beds pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Peat and clay exposures
- Subtidal chalk
- Peat and clay exposures
- Ross worm (*Sabellaria spinulosa*) reefs
- Subtidal chalk

Reference: Theme ID: 1477590
Map Projection: British National Grid

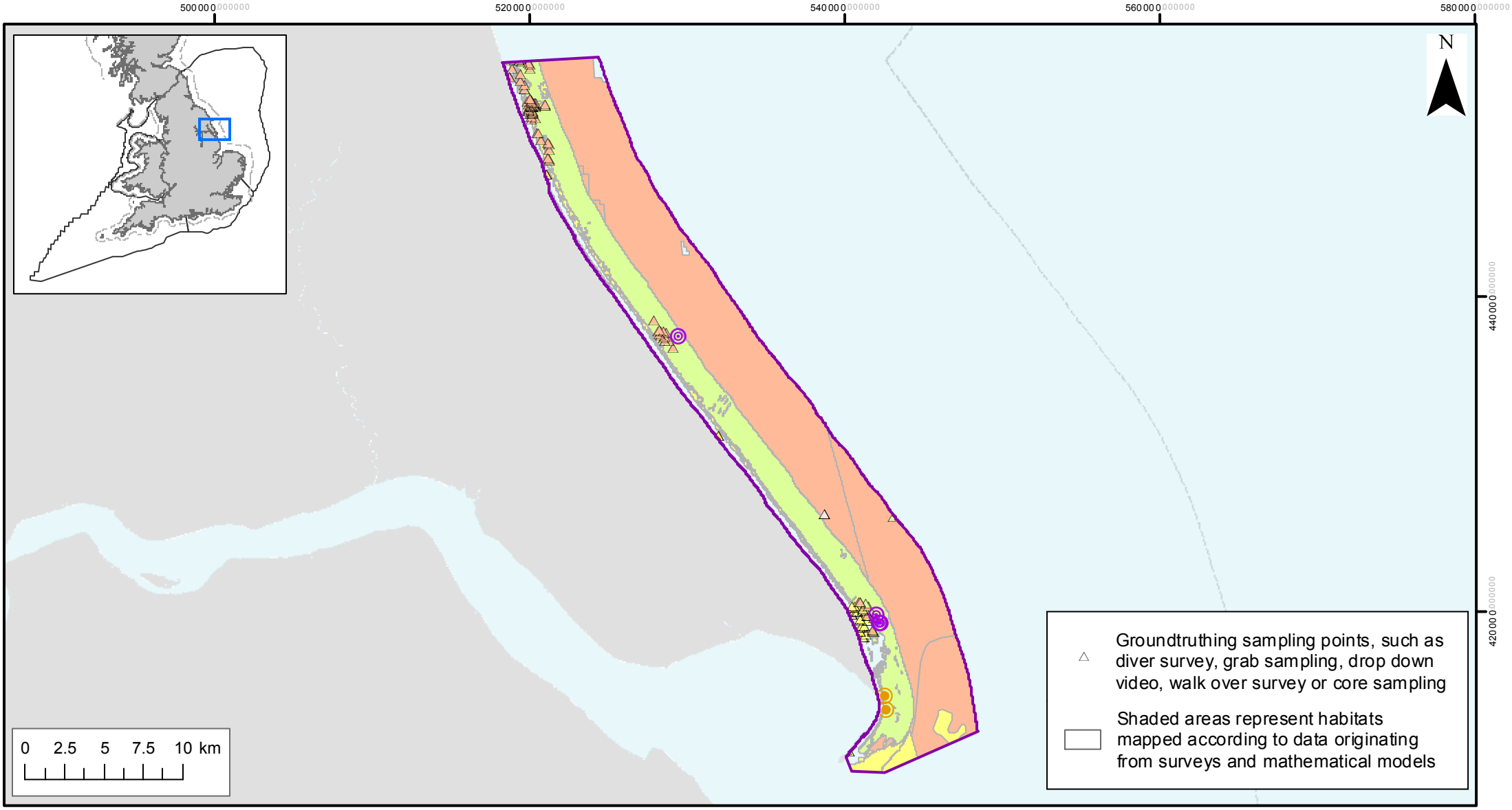
6.2.14 Holderness Inshore pMCZ

Site description

Holderness Inshore pMCZ is located on the Holderness coast, north of the mouth of the Humber Estuary in the East Riding of Yorkshire. The site runs along the coast from Skipsea in the north to Spurn Head in the south and extends offshore to the 3nm limit. This area was proposed as an MCZ due to the presence of broad-scale habitats and a geological feature of interest. Intertidal mixed sediments, subtidal sand, subtidal coarse sediment and subtidal mixed sediment are present.

The mosaic of habitats within the site supports a diverse range of organisms including red algae, sponges and other encrusting fauna; fish species such as European eel, dab, and wrasse, as well as commercially significant crustaceans such as edible and velvet swimming crabs and lobster. The geological feature of Spurn Head, located to the south of the site, is a unique example of a dynamic spit system, extending across the mouth of the macrotidal Humber Estuary. 'The Binks', an area of subtidal terminal moraine adjacent to the spit, traps sediment and reduces erosion to the Spurn Head feature. Few similar features are able to maintain comparable size and length in a setting with such a large tidal range.

Plate 22 Intertidal mixed sediments on the Holderness coast, Natural England



Holderness Inshore pMCZ

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Intertidal sand and muddy sand (A2.2)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Subtidal mixed sediments (A5.4)
- Peat and clay exposures
- Ross worm (*Sabellaria spinulosa*) reefs

Reference: Theme ID: 1477592
Map Projection: British National Grid

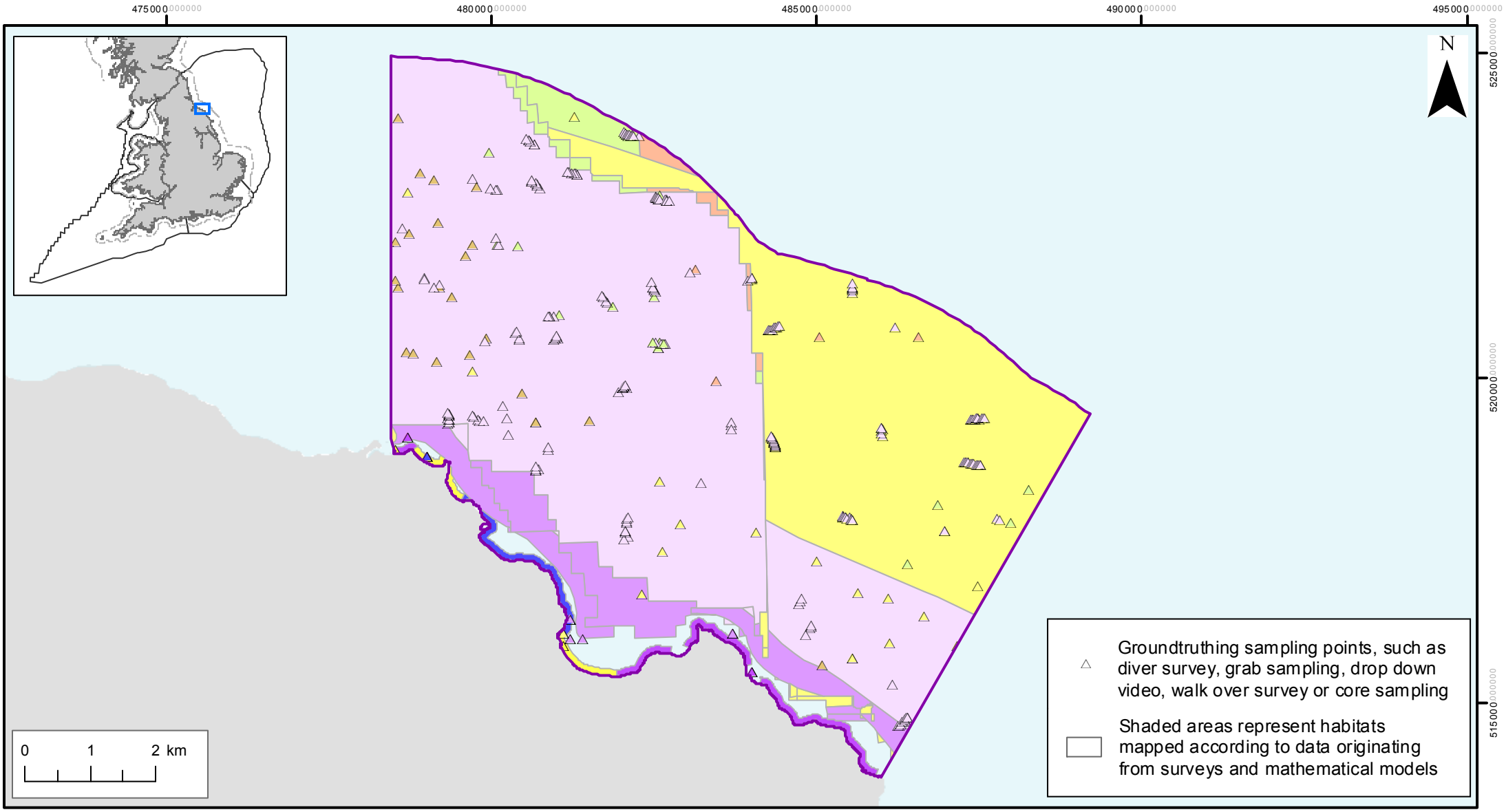
6.2.15 Runswick Bay pMCZ

Site description

Runswick Bay pMCZ is a coastal site which lies north-west of Whitby on the North Yorkshire Coast with an area of approximately 67km^2. The depth range of the site is from mean high water to 30 metres deep. The seabed across the site is composed of a number of rock and sediment features which form a highly diverse and productive mosaic of habitats. The site was recommended for infralittoral and circalittoral rock habitats, as well as subtidal coarse and mixed sediments and subtidal sand. The habitat complex supports diverse communities such as dense carpets of hydroids, bryozoans and sponges interspersed with harder patches of Ross worm reef (Seasearch survey, 2012). The site was also recommended for the ocean quahog (*Arctica islandica*), a Species of Conservation Importance. The intertidal area within the site comprises rocky reefs, boulders and pools, as well as caves and sandy beaches.

The rich benthic habitats also support a number of crustacean species, including eight species of crab and the common lobster, providing rich fishing grounds for lobster and brown crab fisheries. As well as supporting a diverse benthic community, the site provides spawning grounds for a number of fish species including herring (*Clupea harengus*), sprat (*Sprattus sprattus*), cod (*Gadus morhua*), whiting (*Merlangius merlangus*) and plaice (*Pleuronectes platessa*).

Plate 23 Intertidal rocks at Runswick Bay



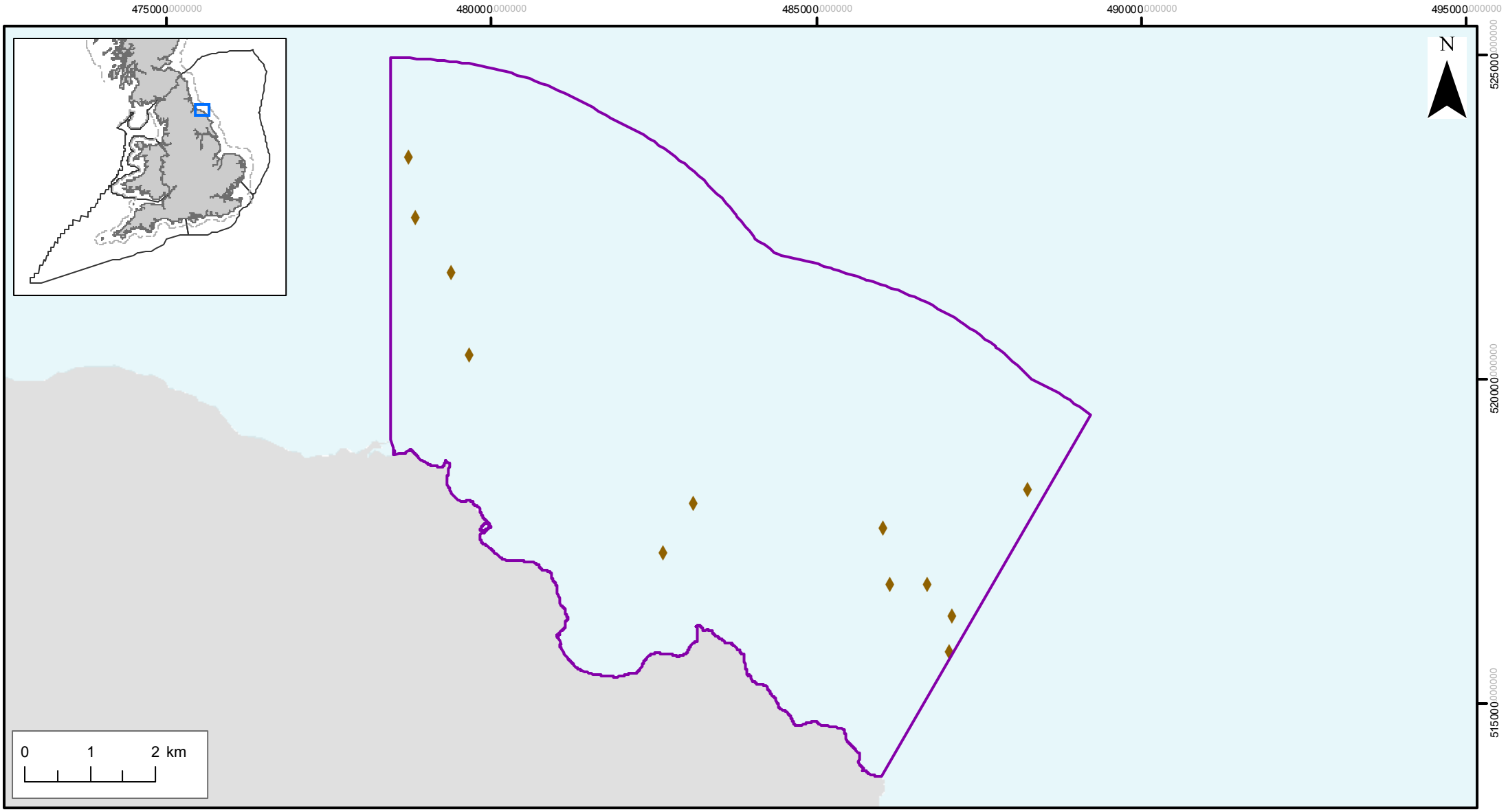
Runswick Bay pMCZ
Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal sand and muddy sand (A2.2)
- Moderate energy infralittoral rock (A3.2)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Subtidal mixed sediments (A5.4)

Reference: Theme ID: 1477585
Map Projection: British National Grid



Runswick Bay pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Ocean quahog (*Arctica islandica*)

Reference: Theme ID: 1477585
Map Projection: British National Grid

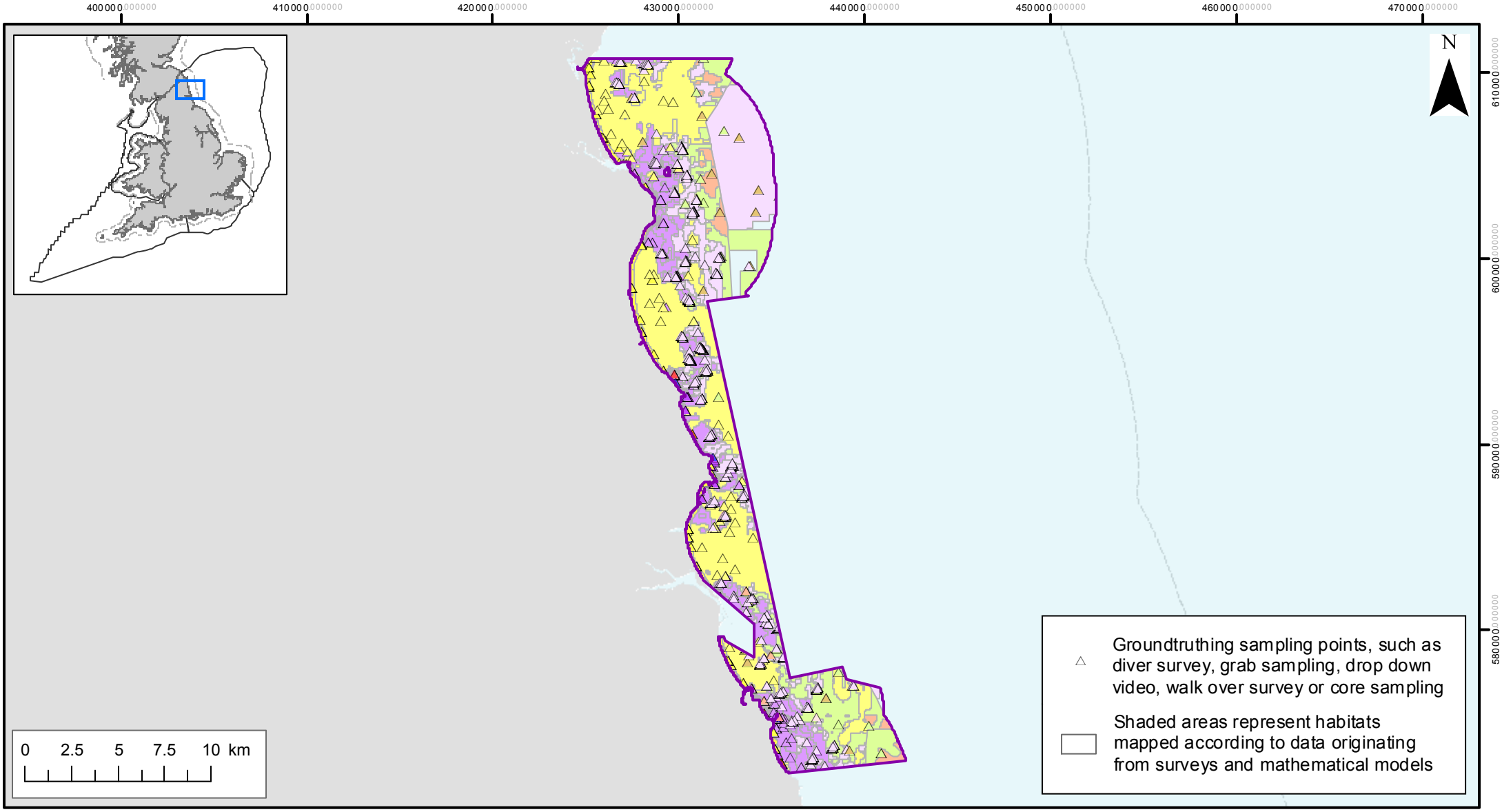
6.2.16 Coquet to St Mary's pMCZ

Site description

Coquet to St Mary's pMCZ is a coastal site located off the coast of Northumberland in the north-east of England with an area of approximately 192km². The pMCZ runs from Alnmouth in the north to Whitley Bay in the south. The seaward boundary nominally runs parallel to the shore adjacent to the 1nM line, with the northern and southern parts of the site extending to the 3nm limit. The seabed across the site is composed of a mosaic of intertidal and subtidal rock and various sediment features. The pMCZ was recommended by the Net Gain regional project. Within the proposed boundary, the pMCZ contains a broad range of intertidal and subtidal rock and sediment broad-scale habitats. Habitat Features of Conservation Importance which have been identified as important components of biodiversity include intertidal underboulder communities, and peat and clay exposures.

The diversity of subtidal habitats supports varied benthic communities and includes sessile species such as anemones, soft corals, sea squirts, hydroids and bryozoans. In addition, these complex habitats and communities support starfish, sea urchins, crabs and lobsters and include the first ever record of the Arctic cushion star for the English coast. The site also supports, for example, diverse intertidal habitats, including intertidal under boulder communities. These communities are formed when suitable habitats such as under boulders, fissures and crevices form a series of microhabitats that provide shelter for smaller species such as calcareous tube worms, crustaceans, brittle stars and bryozoans.

Plate 24 Intertidal rock at St. Mary's Island, copyright Dr Catherine Scott, Natural England



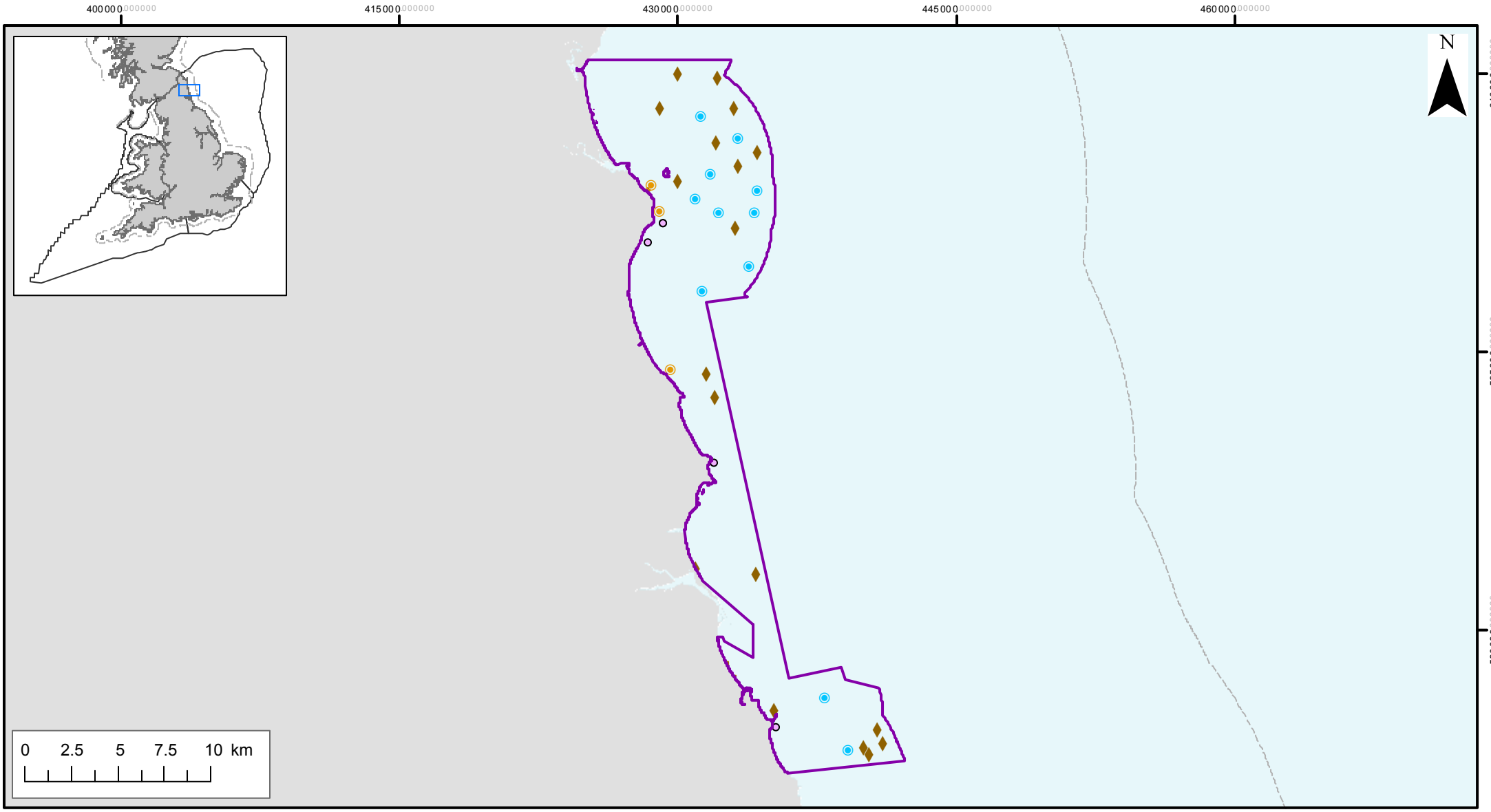
Coquet to St Mary's pMCZ Broad-scale habitats

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy intertidal rock (A1.1)
- Moderate energy intertidal rock (A1.2)
- Low energy intertidal rock (A1.3)
- Intertidal coarse sediment (A2.1)
- Intertidal sand and muddy sand (A2.2)
- Intertidal mud (A2.3)
- Intertidal mixed sediments (A2.4)
- High energy infralittoral rock (A3.1)
- Moderate energy infralittoral rock (A3.2)
- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Subtidal mixed sediments (A5.4)

Reference: Theme ID: 1477586
Map Projection: British National Grid



Coquet to St Mary's pMCZ
Features of Conservation Importance

- Proposed MCZ
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Intertidal under boulder communities
- Peat and clay exposures
- Ocean quahog (*Arctica islandica*)
- Intertidal under boulder communities
- Mud habitats in deep water
- Peat and clay exposures

Reference: Theme ID: 1477586
Map Projection: British National Grid

6.2.17 Beachy Head West MCZ

Site description

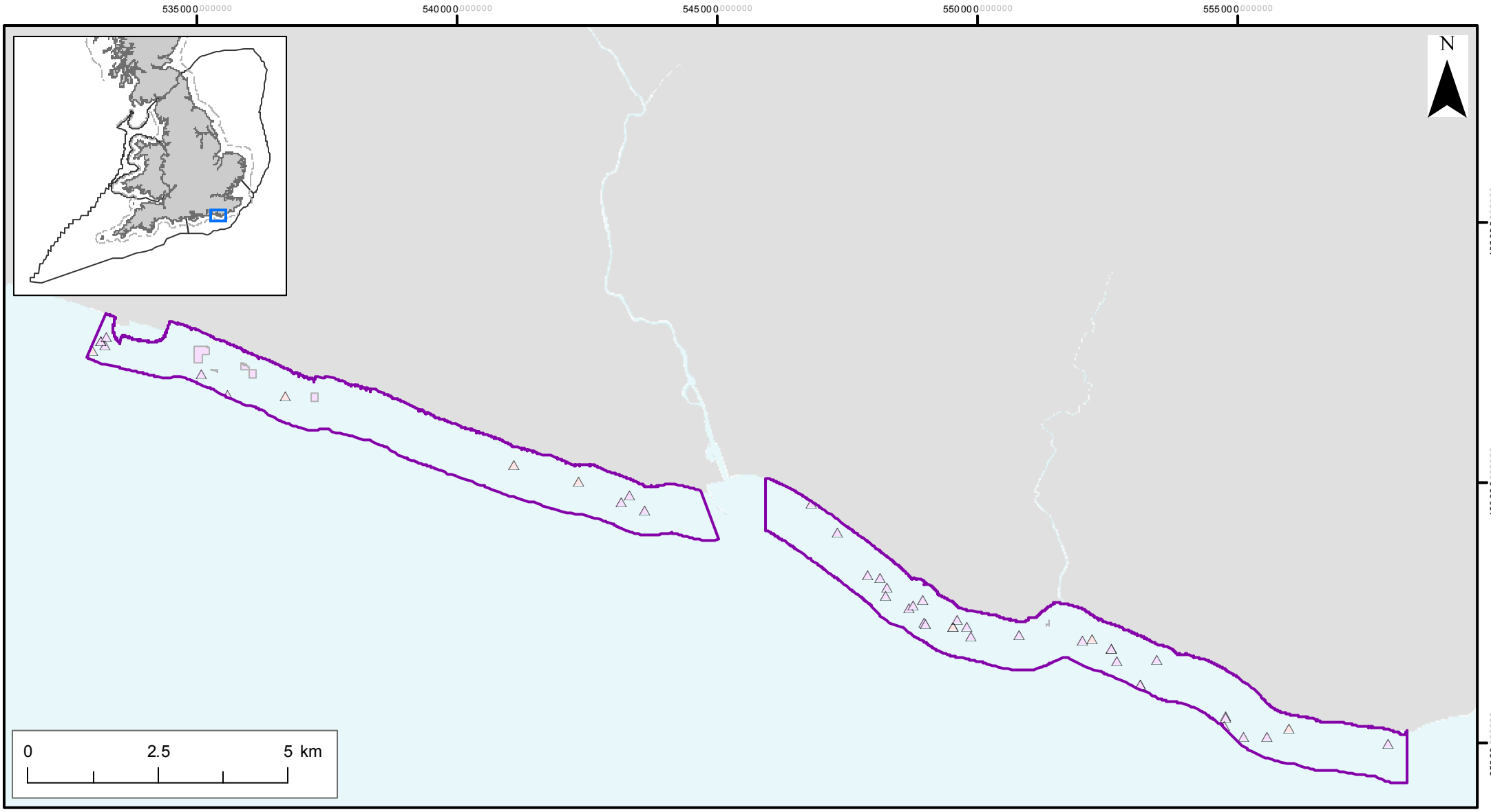
Beachy Head West MCZ is made up of two spatially separate areas in the south-east of England. They run parallel to the East Sussex coastline extending from Brighton to the Beachy Head Cliffs near Eastbourne and protect a total area of approximately 24km^2. The MCZ partially overlaps with the Seven Sisters voluntary marine conservation area. The site contains some of the best examples of chalk habitat in the south-east region. Here the chalk reefs and gullies support specialised communities of animals and seaweeds. Additionally, the sites are known to support the rare short snouted seahorse.

The site protects ten different types of habitat and their associated species and offers specific protection to two Species of Conservation Importance. Within the MCZ there is an extensive intertidal wave-cut chalk platform and subtidal chalk ridges, of which the surface is pitted with holes. These holes are created by burrowing molluscs and, once empty, can be inhabited by and provide shelter to animals such as crabs and anemones. Blue mussel (*Mytilus edulis*) beds and native oysters (*Ostrea edulis*) are found densely packed on the chalk ridges, creating a mosaic of habitats.

Within the shallower waters the rare short snouted seahorse (*Hippocampus hippocampus)* can be found. These are a type of fish, and are one of only two species found in UK waters. Seahorses have excellent eyesight and hunt for their food by sight. They feed on a variety of small crustaceans, such as shrimp, but do not have teeth so instead suck food up through their snouts. Seahorses require protection as they are particularly vulnerable to threats which cause damage to their habitat (Beachy Head West MCZ factsheet, 2011).

Plate 25 Short snouted sea horse, copyright S Trewhella

Plate 26 Seaweed on littoral chalk communities, copyright Lin Baldock



Beachy Head West MCZ
Broad-scale habitats

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy circalittoral rock (A4.1)
- Moderate energy circalittoral rock (A4.2)
- Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling
- Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

Reference: Theme ID: 1477567
Map Projection: British National Grid

6.2.18 South Dorset MCZ

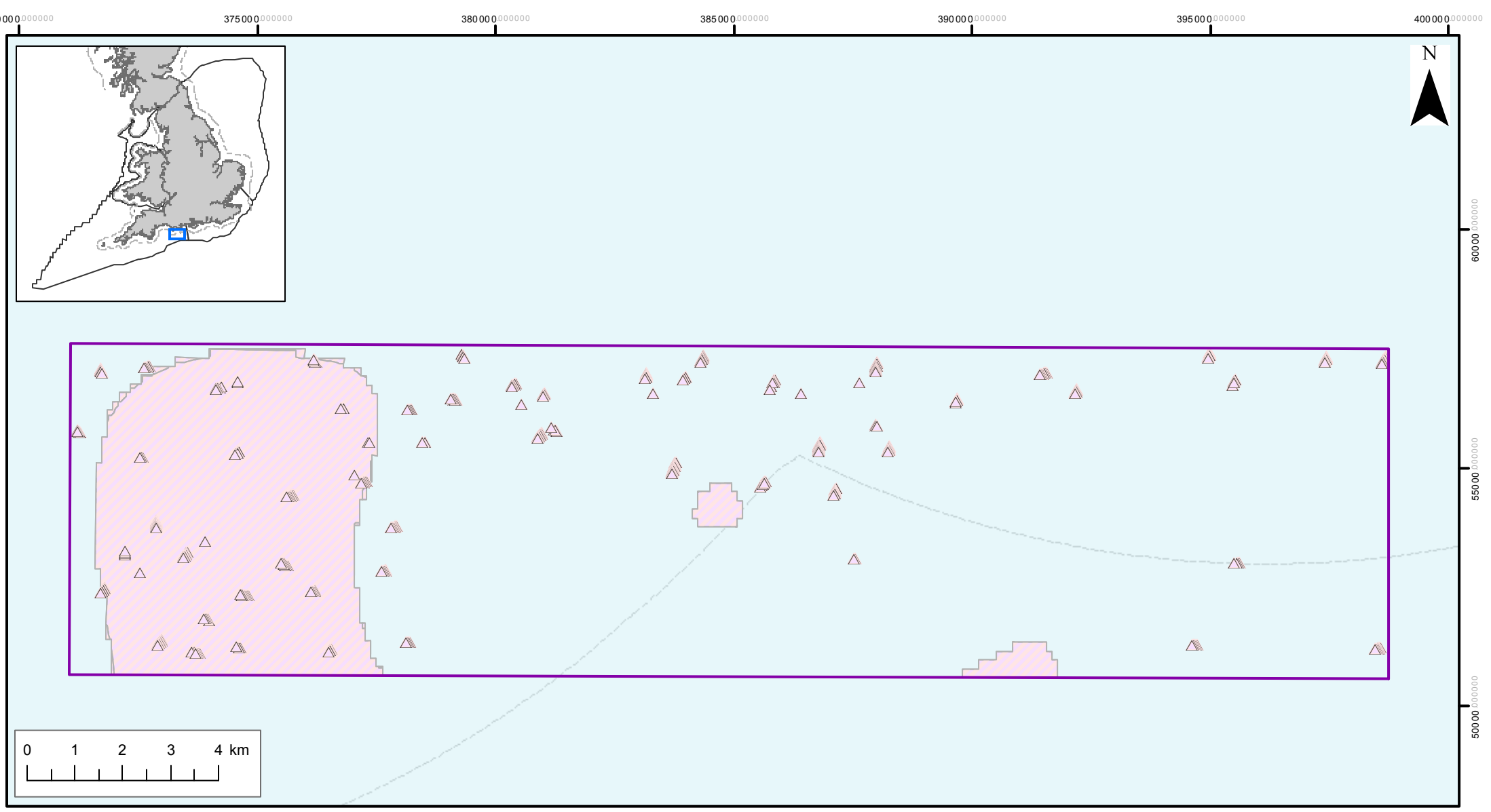
Site description
South Dorset MCZ lies mainly within the 12nm limit but a small part extends further seawards. It is located approximately 17.5km south of St Alban's (St Aldhelm's) Head, to the south-east of Swanage. The site covers an area of approximately 193km^2 making it one of the largest MCZs.

The MCZ protects two seabed habitats, subtidal coarse sediment and subtidal chalk, as well as their associated species. Subtidal chalk is typically found on the south-east and eastern coasts of the UK, but this site protects the only known example of this seabed habitat within the south-west region.

South Dorset MCZ protects an area of seabed that ranges from 36 to 52 metres deep. In deeper water such as this, the chalk seabed environment forms reefs and sea caves. These are particularly important to marine life and have been known to support rare species of sponge, edible crabs and velvet swimming crabs. The surface of subtidal chalk is often bored into by bivalve molluscs, such as the common piddock (*Pholas dactylus*), which use the teeth-like projections on the front of their shells to grind holes into the rock. Once empty, these bore holes provide habitats for a range of crevice-dwelling animals including shellfish, worms and other small invertebrates.

Subtidal coarse sediment can provide nursery grounds for many ecologically and commercially important fish including sea bass and several types of flat fish. The sediment can also support species such as sand eels, which are an important food source for seabirds such as puffin, razorbills and guillemots.

Plate 27 Subtidal coarse sediment, copyright Natural England



South Dorset MCZ
Broad-scale habitats

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High/moderate energy circalittoral rock (A4.1/A4.2)
- Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling
- Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

Reference: Theme ID: 1477637
Map Projection: British National Grid

6.2.19 Chesil Beach and Stennis Ledges MCZ

Site description

Chesil Beach and Stennis Ledges MCZ is an inshore site located off the Dorset coast. It runs along the length of Chesil Beach from Abbotsbury, to Weston on the Isle of Portland in the south-east. The site covers an area of approximately 37km^2 and extends seawards to include the reefs of the Stennis Ledges, an area of rocky ridges and rugged seabed.

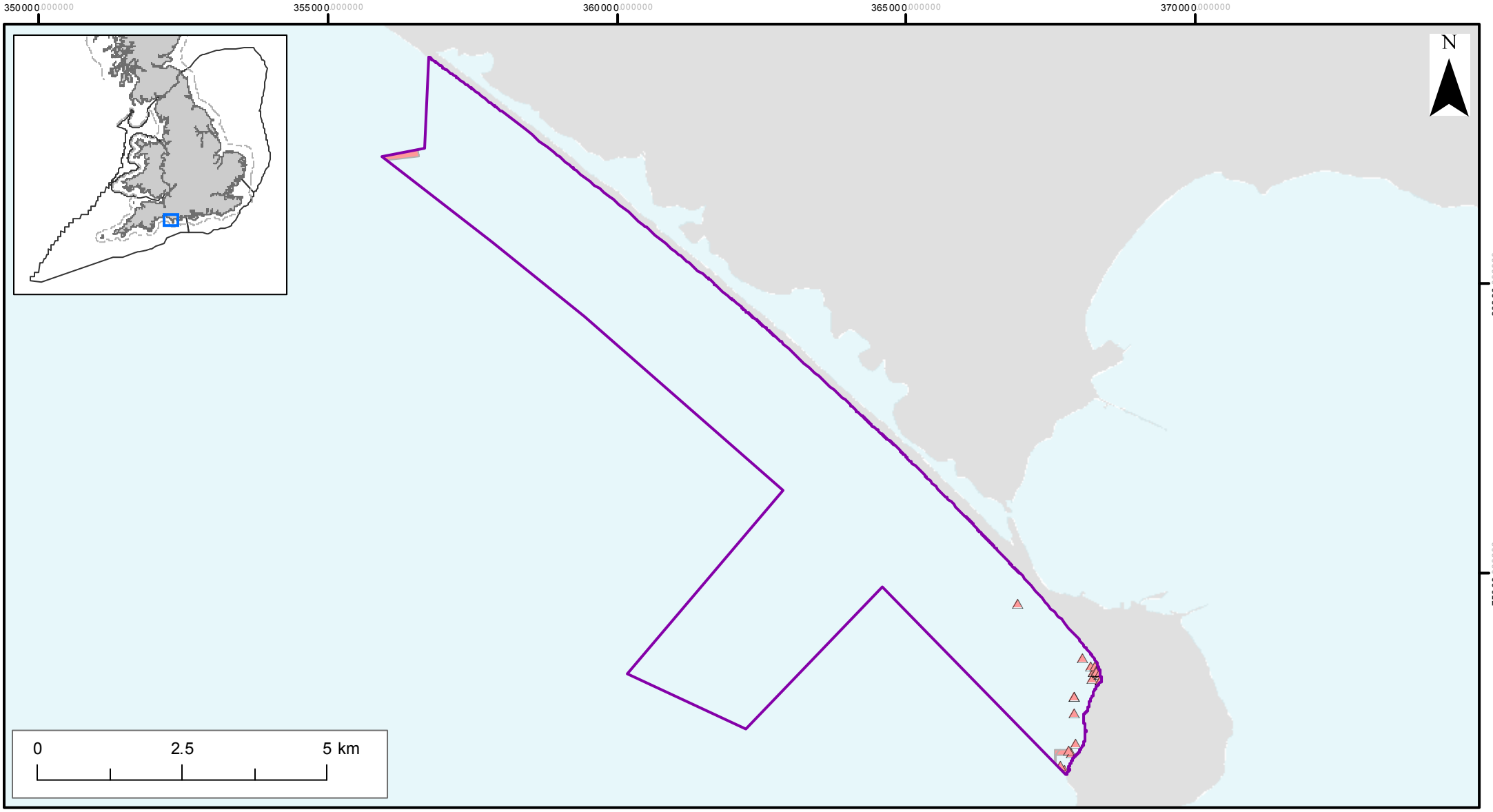
A variety of seabed habitats are found within this site including rock and gravels which can support a wide variety of species. These are being protected as they are representative of our marine environment and previously only had limited protection in the south-west region.

The rocky habitats within the MCZ are rich in plants and animals such as sponges and sea mosses, and also provide a suitable habitat for inshore commercial fisheries species, such as common lobster and crab. Native oysters are also found on the rocky habitats within the site. They are under pressure from invasive species such as the slipper limpet.

Sediments such as gravels, pebbles and coarse sands are also found within the intertidal area of the site. This habitat supports species such as tiny shrimp-like creatures that can live amongst the sediment, and therefore provides an important feeding area for wading birds.

Pink sea-fans are found within the MCZ and are a type of soft coral. A single 'fan' is actually made up of colonies of tiny anemone-like creatures which attach to rocky seabed habitats and never move during their adult lives. It is extremely slow growing and so very sensitive to damage.

Plate 28 Intertidal coarse sediments on Chesil Beach, copyright Natural England



Chesil Beach and Stennis Ledges MCZ Broad-scale habitats

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- High energy infralittoral rock (A3.1)
- Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling
- Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

Reference: Theme ID: 1477640
Map Projection: British National Grid

6.2.20 Torbay MCZ

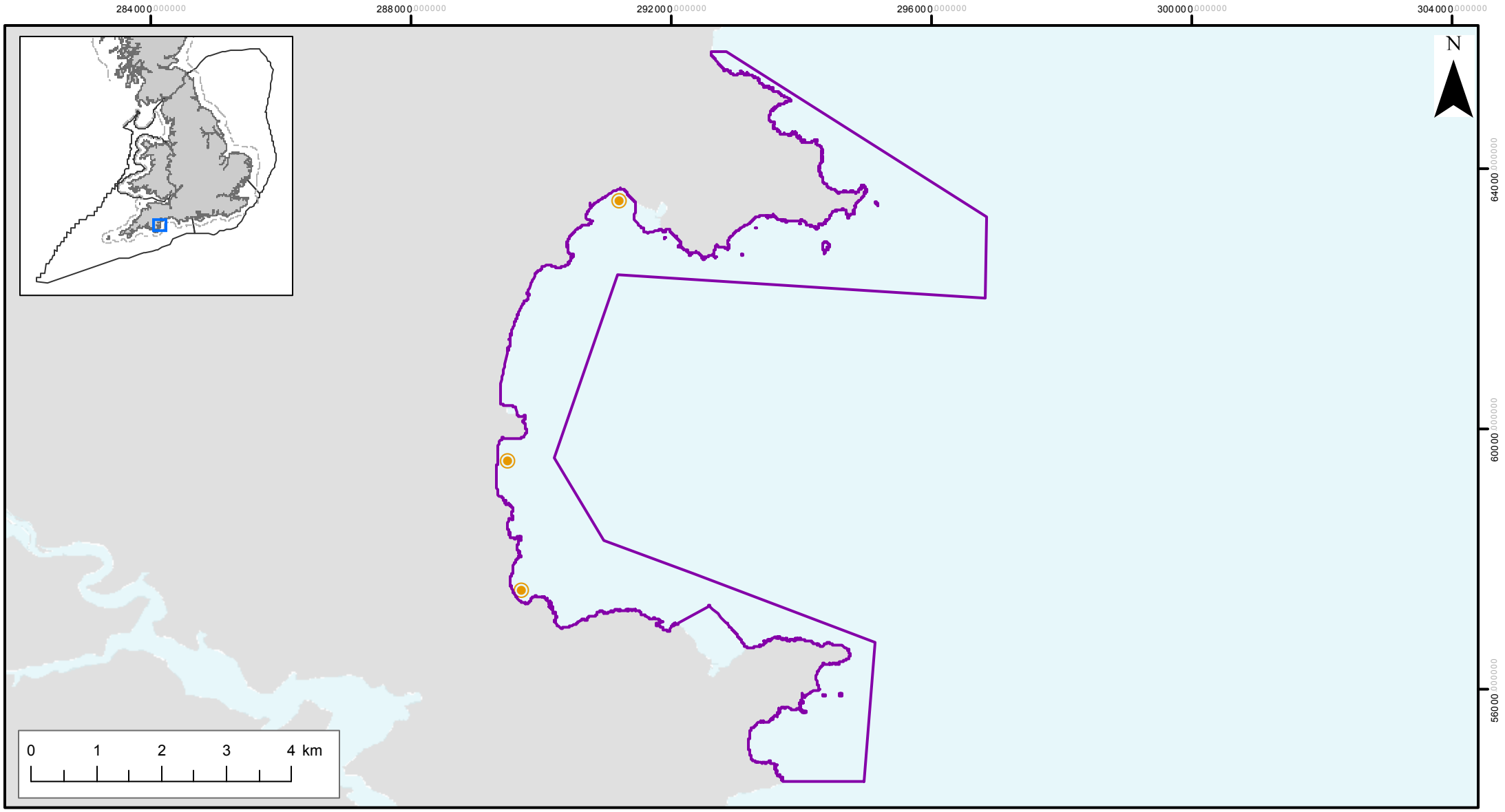
Site description

Torbay MCZ covers an area of coastline in South Devon between Oddicombe Beach and Sharkham Point. The site extends from the shoreline out to a depth of 30 metres and includes a range of habitats exposed to different environmental conditions. This variation creates an area capable of supporting a rich array of marine wildlife. The high level of biodiversity in the surrounding area has previously been recognised with Torbay being described as 'the jewel in South Devon's crown'.

Ten different habitats are protected within the MCZ. The inshore areas of Torbay's natural harbour are predominantly soft muddy sands which are characterised by animals such as heart urchins and brittlestars. Less muddy sand is found closer to the shore and holds dense populations of species including razor shells. The site's rocky areas support sponges, sea squirts and seaweeds. Beds of seagrass are found within the MCZ. Seagrass are plants with dark green, long, narrow ribbon-shaped leaves and the only flowering plant able to live in seawater and pollinate whilst submerged. The seagrass provides a habitat for a wide range of animals such as pipe fish and the nationally rare long snouted seahorse which shelter amongst its leaves. They also act as a nursery area for a range of animals such as bass and cuttlefish and molluscs and worms burrow into the roots and surrounding sediments.

Plate 29 Long snouted seahorse, copyright S Trewhella

Plate 30 Berry Head, Torbay Marine Conservation Zone, copyright Phil Stocks



Torbay MCZ
Features of Conservation Importance

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Peat and clay exposures

Reference: Theme ID: 1477643
Map Projection: British National Grid

6.2.21 Upper Fowey and Pont Pill MCZ

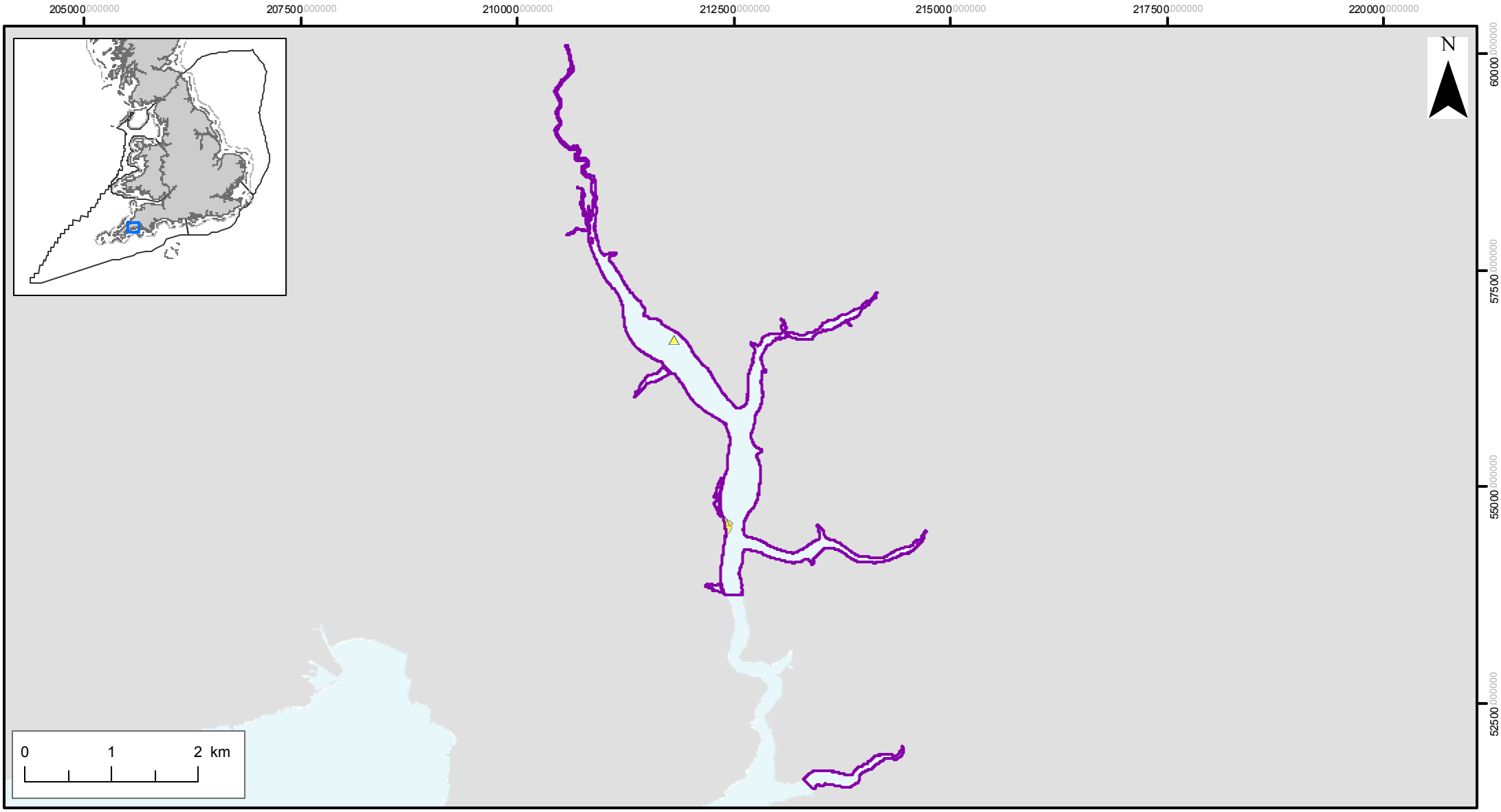
Site description

The Upper Fowey and Pont Pill MCZs consist of two spatially separate areas. These estuary sites located on the Cornish coast protect a total area of 2km^2 making it one of the smallest MCZs. The larger area protects the upper tidal reaches of the Fowey estuary extending to Lostwithiel and including the River Lerryn, Penpoll Creek and Bodmin Pill. The smaller area protects Pont Pill, a tributary estuary flowing into the Fowey on the eastern side near Polruan. The MCZs protect an area that is representative of the estuarine habitats found across the south-west region.

The habitats and associated species within the site make an important contribution to the marine protected areas network. The Fowey estuary contains intertidal mud and sediments, as well as saltmarshes and unusual estuarine rocky habitats which create an environment capable of supporting a diverse range of species. A range of habitats and associated species are present within this MCZ including coastal saltmarshes and saline reedbeds. Saltmarshes are found in the upper sections of intertidal mudflats, in areas sheltered from wave action, and are characterised by a range of specialised salt-tolerant species. Saline reedbeds are restricted to the very top of the tidal range, typically in areas where there are freshwater inputs, creating more brackish conditions. Intertidal mud flats and saltmarshes act as important food and habitat resources for wading birds and wildfowl. Communities of plants and animals within estuaries are adapted to conditions of low wave energy, strong tides, freshwater inflows, and high amounts of suspended silt within the water column.

The majority of estuaries in England tend to be characterised by mud and sand habitats that are typically dominated by communities of bivalves and worms. The Upper Fowey and Pont Pill MCZ includes areas of estuarine rocky habitat. These are important as they contribute to the richness of life within estuaries by providing an alternative habitat which can support different species to the sediment habitat which usually characterises estuarine environments. Large seaweeds, wracks and kelps tend to dominate rocky areas of shoreline. Amongst these are crustaceans including barnacles and shore crabs, marine molluscs including periwinkles and top shells, and occasionally sponges and sea squirts. Below the low water mark the communities are equally varied, with anemones, sponges, sea mats and sea squirts often found growing on rocky surfaces. There can be considerable differences between communities living in rocky environments at the upper ends of estuaries and those towards the mouth, which more closely resemble those found in open coast rocky shores. Along with the species mentioned, the estuarine rocky habitats provide nursery grounds for commercially important fish species including sea trout and bass.

Plate 31 Intertidal sediments at Golant, Fowey Estuary, Rob Seebold



Upper Fowey and Pont Pill MCZ
Broad-scale habitats

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Intertidal sand and muddy sand (A2.2)
- Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling
- Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

Reference: Theme ID: 1477651
Map Projection: British National Grid

6.2.22 The Manacles MCZ

Site description

The Manacles MCZ is an inshore site located on the east coast of the Lizard Peninsula, in south-west Cornwall. The Manacles is a relatively small MCZ, extending just 2km from the coastline and running from Polcries northwards to Porthoustock Point along the landward boundary.

The intertidal area in The Manacles MCZ is dominated by rock and coarse sediment, encompassing rocky points and sandy coves.

As well as the many shipwrecks found under the waves at the site, there lies a series of large underwater rocky outcrops of moderate energy infralittoral rock and moderate energy circalittoral rock, extending to depths of 14 to 57 metres. This underwater landscape provides for a huge variety of rich rocky reef communities. The diverse seafloor landscape also includes maerl beds and sedimentary habitats such as subtidal sand.

The high quality reefs at The Manacles are a principal reason underpinning the site's recommendation as an MCZ. Dense populations of the pink sea-fan (*Eunicella verrucosa)* occur throughout the deeper waters of the MCZ, some of which support the sea-fan anemone (*Amphianthus dohrnii*). The Manacles MCZ creates and supports a habitat ideal for mobile species such as the spiny lobster (*Palinurus elephas*), found amongst the bedrock and boulders of the rocky reef system. The stalked jellyfish (*Haliclystus auricula)* has also been recorded in the site.

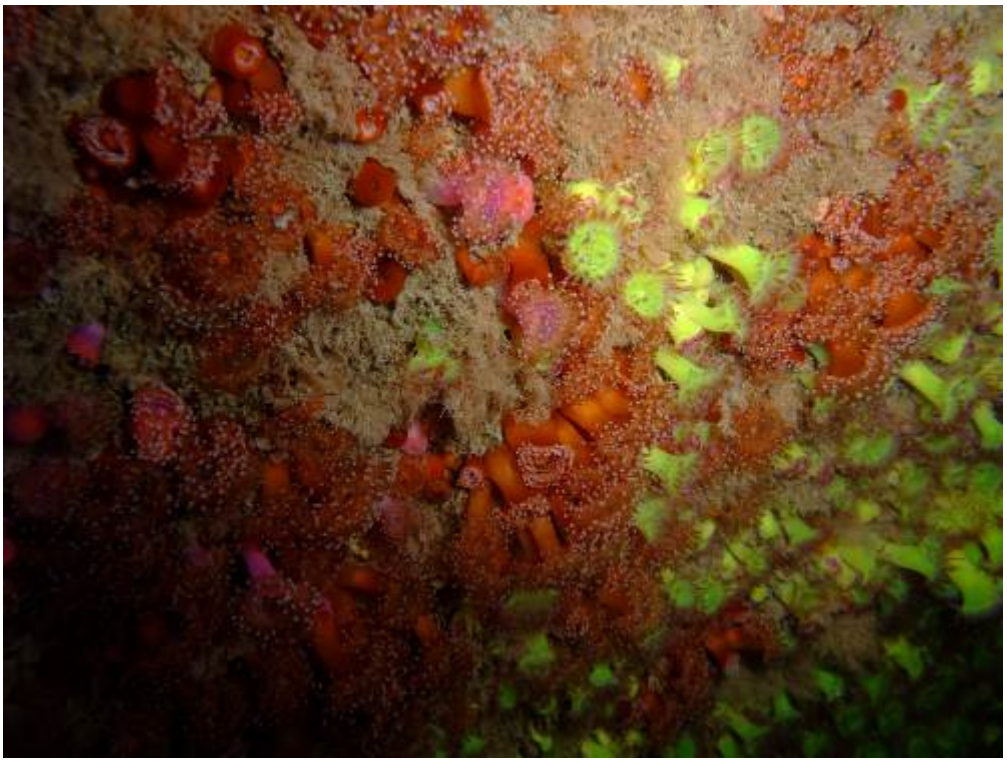
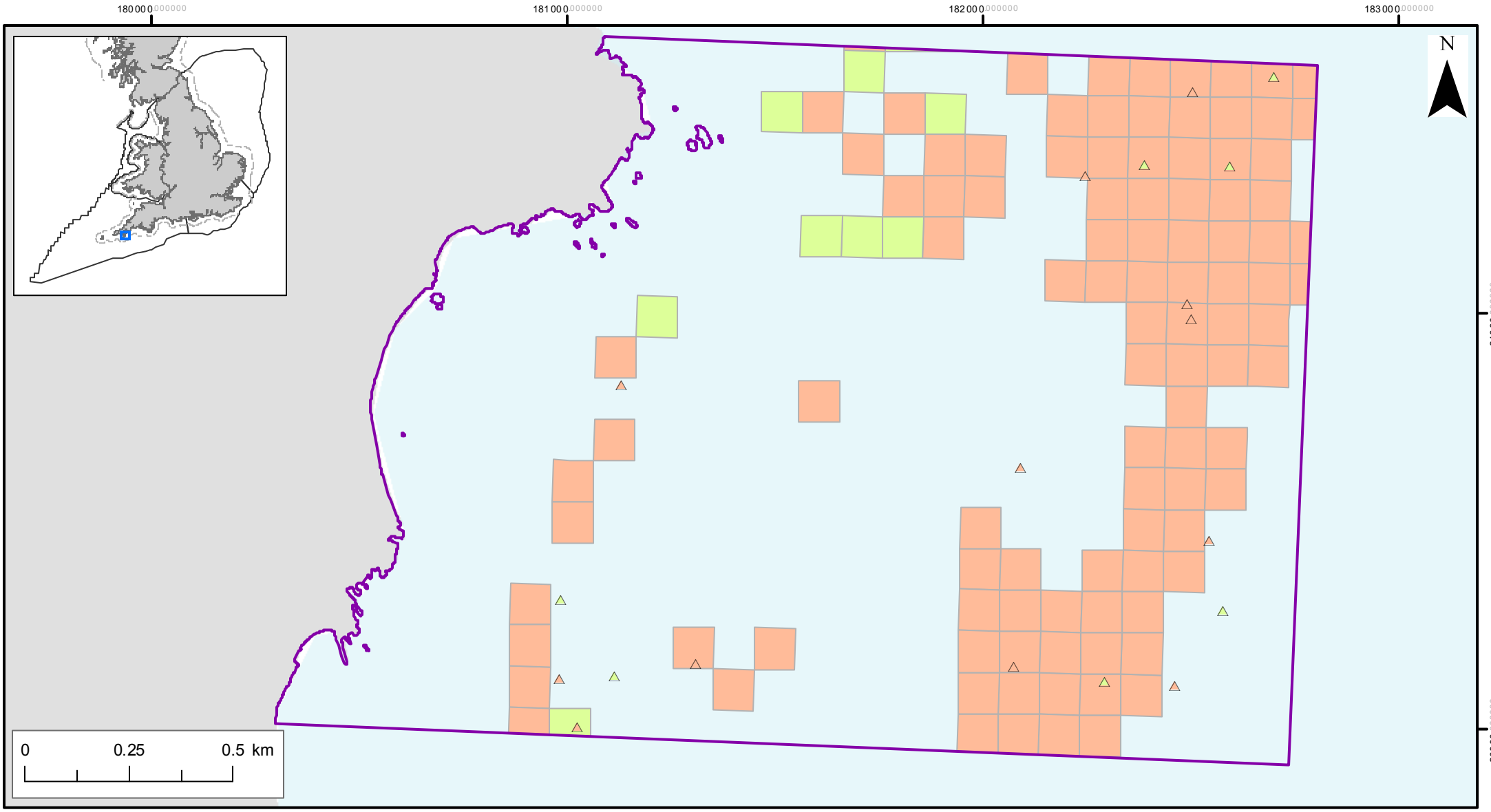


Plate 32 Jewel Anemones, Angela Gall



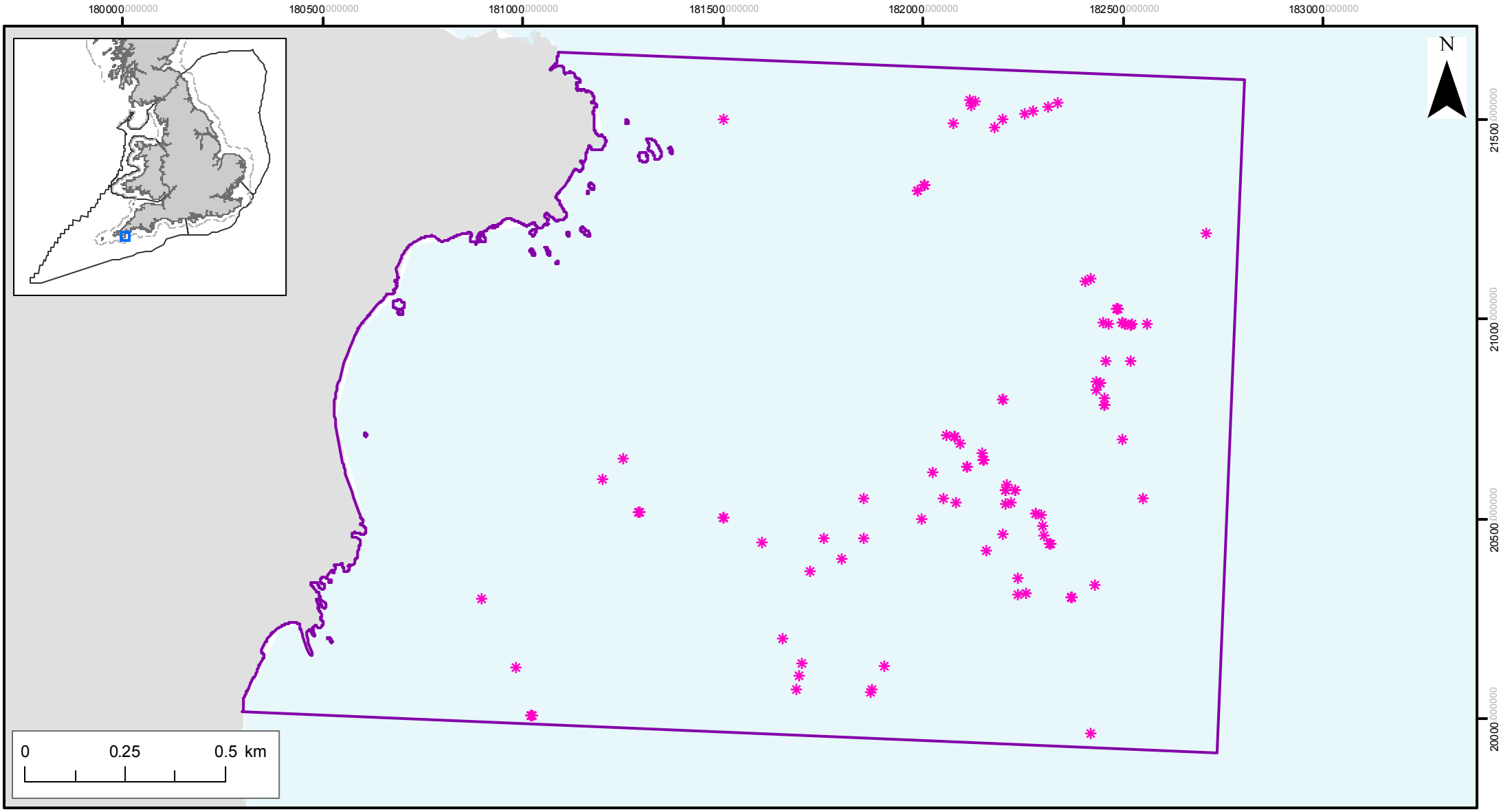
The Manacles MCZ
Broad-scale habitats

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Subtidal coarse sediment (A5.1)
- Subtidal mixed sediments (A5.4)
- Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling
- Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

Reference: Theme ID: 1477653
Map Projection: British National Grid



The Manacles MCZ
Features of Conservation Importance

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Pink sea-fan (*Eunicella verrucosa*)

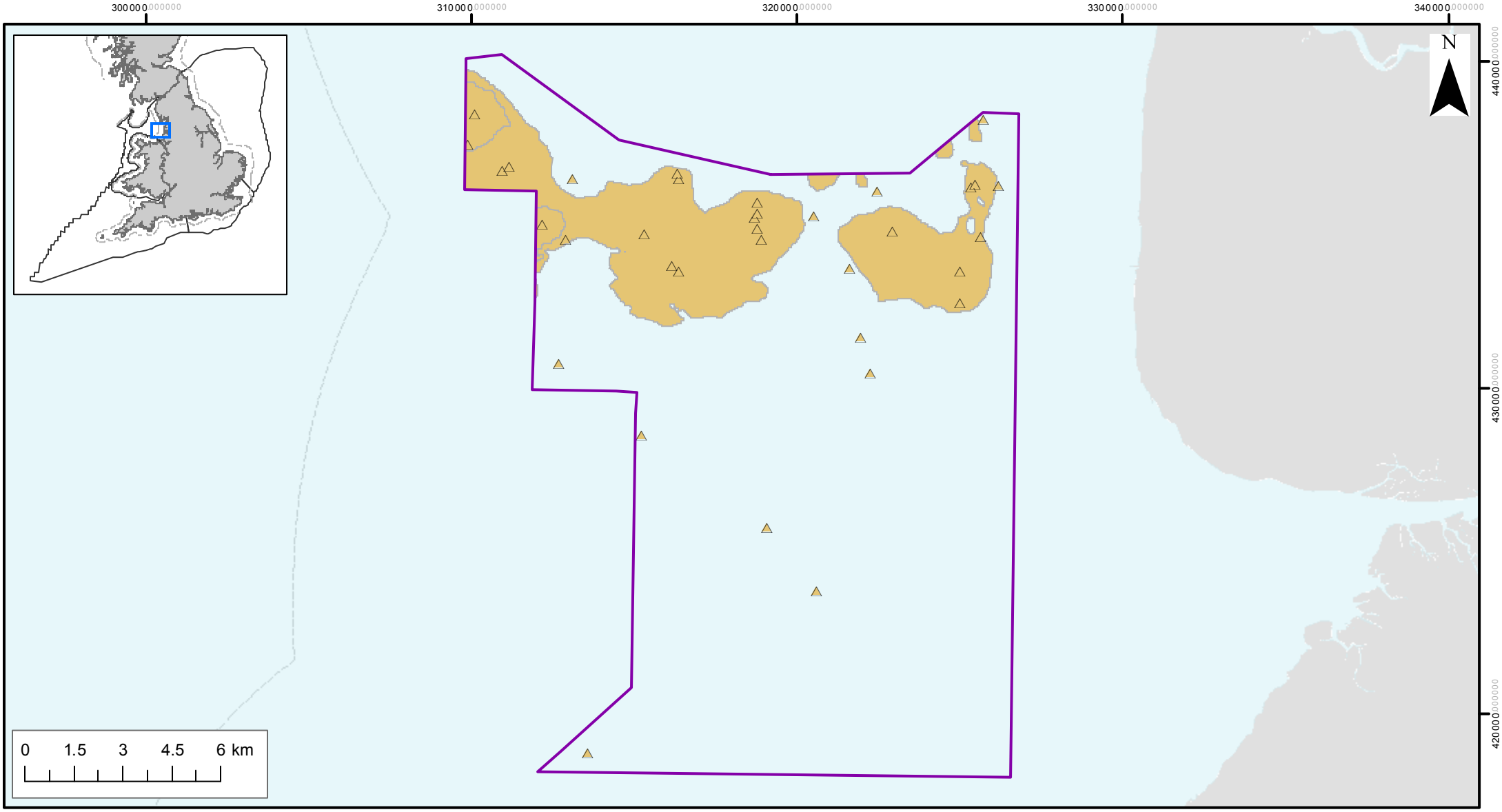
Reference: Theme ID: 1477653
Map Projection: British National Grid

6.2.23 Fylde MCZ

Site description
Fylde MCZ is located in the Eastern Irish Sea, lying between 3 and 20km off the Fylde coast and Ribble estuary. The total area of the site is roughly 260km^2. The depth of the seabed ranges from almost being exposed on a low tide (just 35cm depth) to 22 metres at its deepest part. The site was chosen for the extensive areas of subtidal sediment habitats and communities present. Fylde MCZ was designated in 2013 to provide protection to the broad-scale habitat subtidal sand. New evidence indicates that the site also includes the broad-scale habitat subtidal mud. These are considered to be good representatives of the seabed habitats and communities found on the eastern side of Liverpool Bay. The sediment communities are known to support rich bivalve mollusc populations. The site includes important nursery and spawning grounds for several commercially important fish species including sole (*Solea solea*), plaice (*Pleuronectes platessa*) and whiting (*Merlangius merlangus*).

The site is located next to Shell Flat sandbank, part of Shell Flat and Lune Deep Special Area of Conservation (SAC). The site extends protection to other rich areas of seabed outside of the SAC. The site is co-located within the Liverpool Bay Special Protection Area (SPA) which provides protection for SPA bird interest features and their supporting habitats.

Plate 33 Subtidal sand, copyright Lin Baldock



Fylde MCZ
Broad-scale habitats

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nm Territorial Seas Limit
- Sea
- Land

Features assessed in Natural England's 2015 advice

- Subtidal mud (A5.3)
- Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling
- Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

Reference: Theme ID: 1477724
Map Projection: British National Grid

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