

Net Gain

Final Recommendations Submission to Natural England & JNCC

**Section 7.19 (Site Assessment Document)
rRA 1, North Norfolk Blue Mussel Beds**

31 August 2011

Version 1.1

7.19 Marine Conservation Zone: rRA 1, North Norfolk Blue Mussel Beds

Version and issue date	Amendments made
V1.0 August, 2011	

Site name

rRA 1, North Norfolk Blue Mussel Beds (falls within NG 2, Cromer Shoal Chalk Beds)

Site centre location

52° 55' 14''N, 1° 28' 52''E

52.920754°, 1.481329°

Lambert Azimuthal Equal Area projection, ETRS89 datum

Site surface area

0.25km² / 25ha

Lambert Azimuthal Equal Area projection, ETRS89 datum

Biogeographic region

JNCC Regional Sea: Southern North Sea

OSPAR Region II: Greater North Sea

Table 7.153 Features proposed for designation within rRA 1, North Norfolk Blue Mussel Beds

Feature type	Feature name	Area covered within site (for broad-scale habitats and habitats of conservation importance)
Broad-scale habitat	A3.2: Moderate energy infralittoral rock	0.25km ²
Habitat of conservation importance	Blue mussel beds	0.25km ²
Habitat of conservation importance	Subtidal chalk (modelled)	0.003km ²
Habitat of conservation importance	Subtidal sands and gravels (modelled)	0.25km ²
Species of conservation importance	n/a	n/a
Geological feature	n/a	n/a
Other feature	n/a	n/a

Features within rRA 1, North Norfolk Blue Mussel Beds not proposed for designation

All features that are present within rRA 1 have been recommended for designation.

Map of site

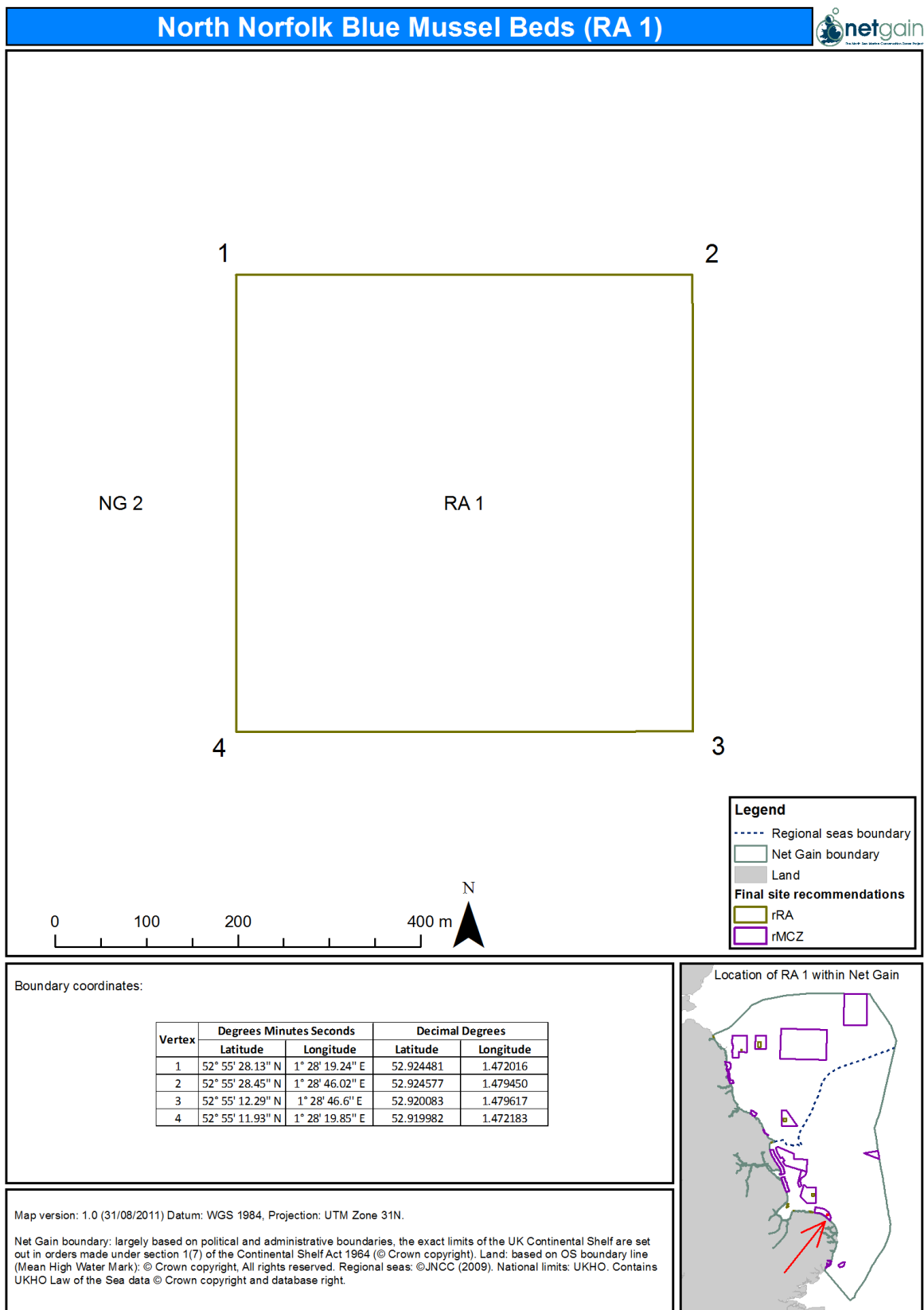


Figure 7.153 Location and extent of rRA 1 (North Norfolk Blue Mussel Beds)

Site summary

Recommended RA 1 falls within NG 2 approximately 5 km from the Norfolk Coast, in the East of England. The depth of the site from the UKHO data layer is 15m (Figure 7.157), and is being put forward for recommendation to protect blue mussel beds. The presence of this feature has been confirmed by IFCA surveys using a day grab sampling method (IFCA, 2011). It is a site that is already monitored by the IFCA, and they have indicated that this monitoring would continue. The blue mussel beds provide a habitat for species such as seaweeds, anemones, barnacles, gastropods, starfish and worms (Natural England, 2011) creating an area that supports a biodiverse fauna and flora. Other habitats present within the site include moderate energy infralittoral rock, subtidal chalk and subtidal sands and gravels.

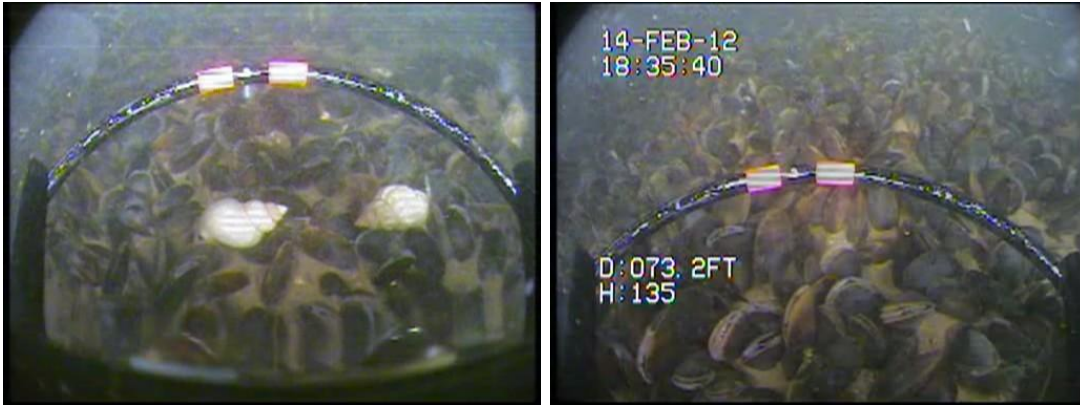
Detailed site description

rRA1 is primarily being recommended for designation for the presence of blue mussel (*Mytilus edulis*) beds. In addition three other features are recommended for designation, moderate energy infralittoral rock, subtidal chalk (modelled) and subtidal sands and gravels (modelled).

Cromer Blue Mussel surveys by IFCA (2011) show the site to have high densities of blue mussels present. The surveys show the mussel occurs in a dense, homogenous coverage, creating a layer of finer sediment (pseudofaeces) around them. The mussels form extensive beds, with living and dead mussels, sand and mud all bound together by the mussels' sticky 'beards' of byssus threads. The data received from the IFCA, shows the surveyed area has varying densities, and suggests that the mussel beds may continue further than has been surveyed to date. As this blue mussel bed occurs within a no trawl zone (Figure 7.158), should the site be designated it would provide a buffer and increased protection of the beds. Grab samples and video footage yielded mussel and a mixture of sand and gravel, classifying the area as sublittoral mixed sediment. Their role in this habitat is of particular importance as they provide a hard surface and attract and support a greater range of marine life than would otherwise be found there (Natural England, 2011). Seaweeds, anemones, barnacles, sea snails and starfish and worms have been found living on blue mussel beds (Natural England, 2011). Recent surveys carried out by the Wildlife Trusts' North Sea Project (2011) have uncovered 131 types of seaweed in areas adjacent to North Norfolk, areas surrounding this recommended reference Area.

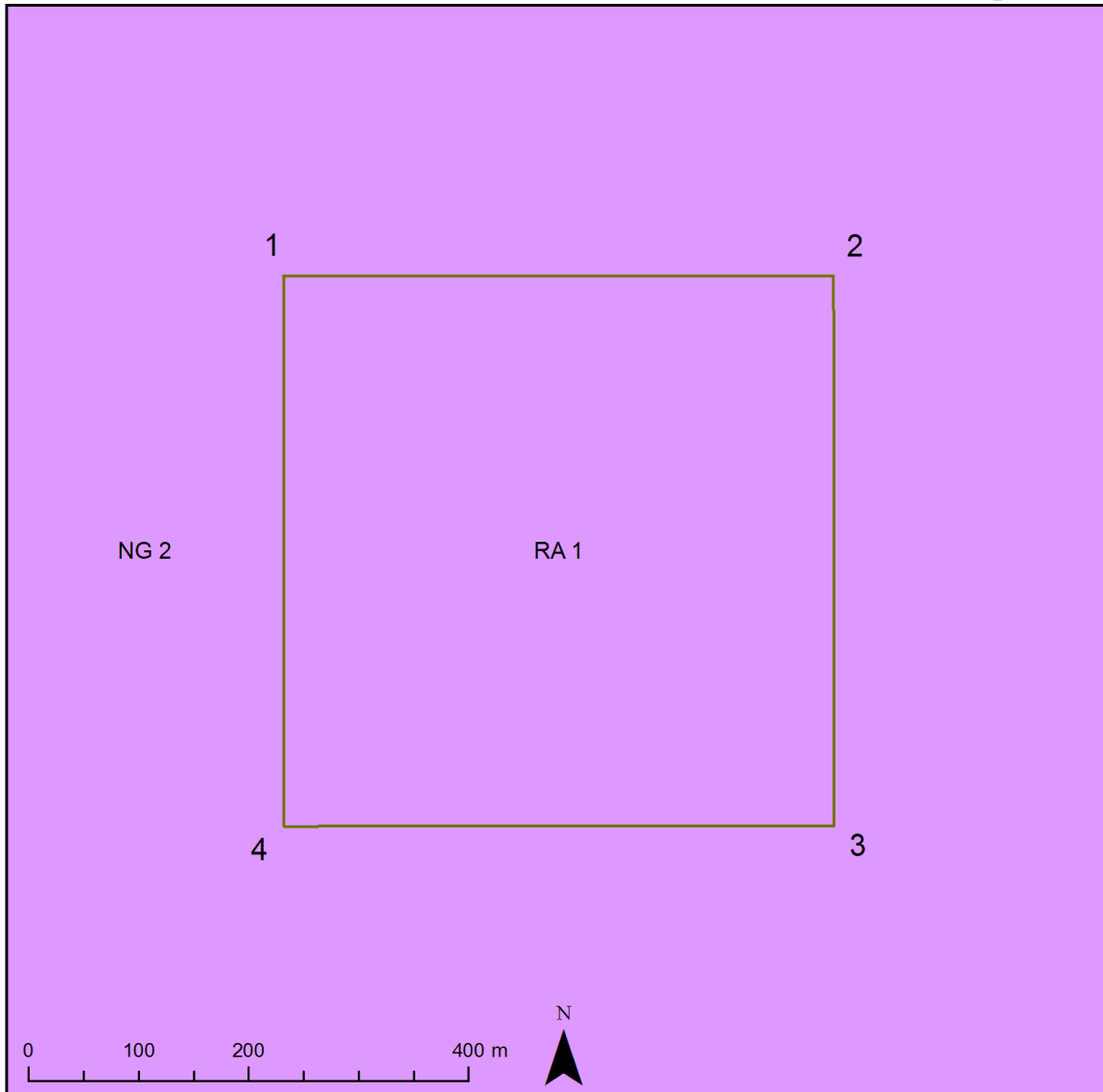
Subtidal chalk is a relatively scarce environmental resource. The subtidal chalk present within this site is present based on modelled data; however it is known that the subtidal chalk present within NG 2 hosts large communities of burrowing piddock shells, sponges and worms (Natural England, 2011). Seasearch dives within and surrounding this area have identified sponges, sea squirts, finger bryozoans and squat lobsters (Spray and Watson, 2010a).

Subtidal sands and gravels are the most common habitats found below the level of the lowest low tide around the coast of the United Kingdom and they are also found within rRA1. They are largely derived and formed from rock material (Maddock, 2008). The diversity of flora and fauna living within the biotopes varies according to the level of environmental stress to which they are exposed.

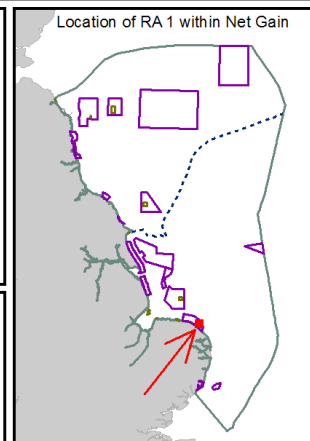


Photos courtesy of Cromer Blue Mussel bed surveys, IFCA, 2011.

North Norfolk Blue Mussel Beds (RA 1)



Legend	
-----	Regional seas boundary
-----	Broad scale habitat
□	Net Gain boundary
□	A3.2: Moderate energy infralittoral rock
■	Land



Map version: 1.0 (31/08/2011) Datum: WGS 1984, Projection: UTM Zone 31N.

Broad scale habitats (UKSeaMap2010; Intertidal habitats; MESH, Humber REC): JNCC, 2010; ABPmer, 2010; MESH, 2010, MALSf, 2011 respectively. Net Gain boundary: largely based on political and administrative boundaries, the exact limits of the UK Continental Shelf are set out in orders made under section 1(7) of the Continental Shelf Act 1964 (© Crown copyright). Land: based on OS boundary line (Mean High Water Mark): © Crown copyright. All rights reserved. Regional seas: © JNCC (2009). All rights reserved.

Figure 7.154 Broad-scale habitat present within rRA 1

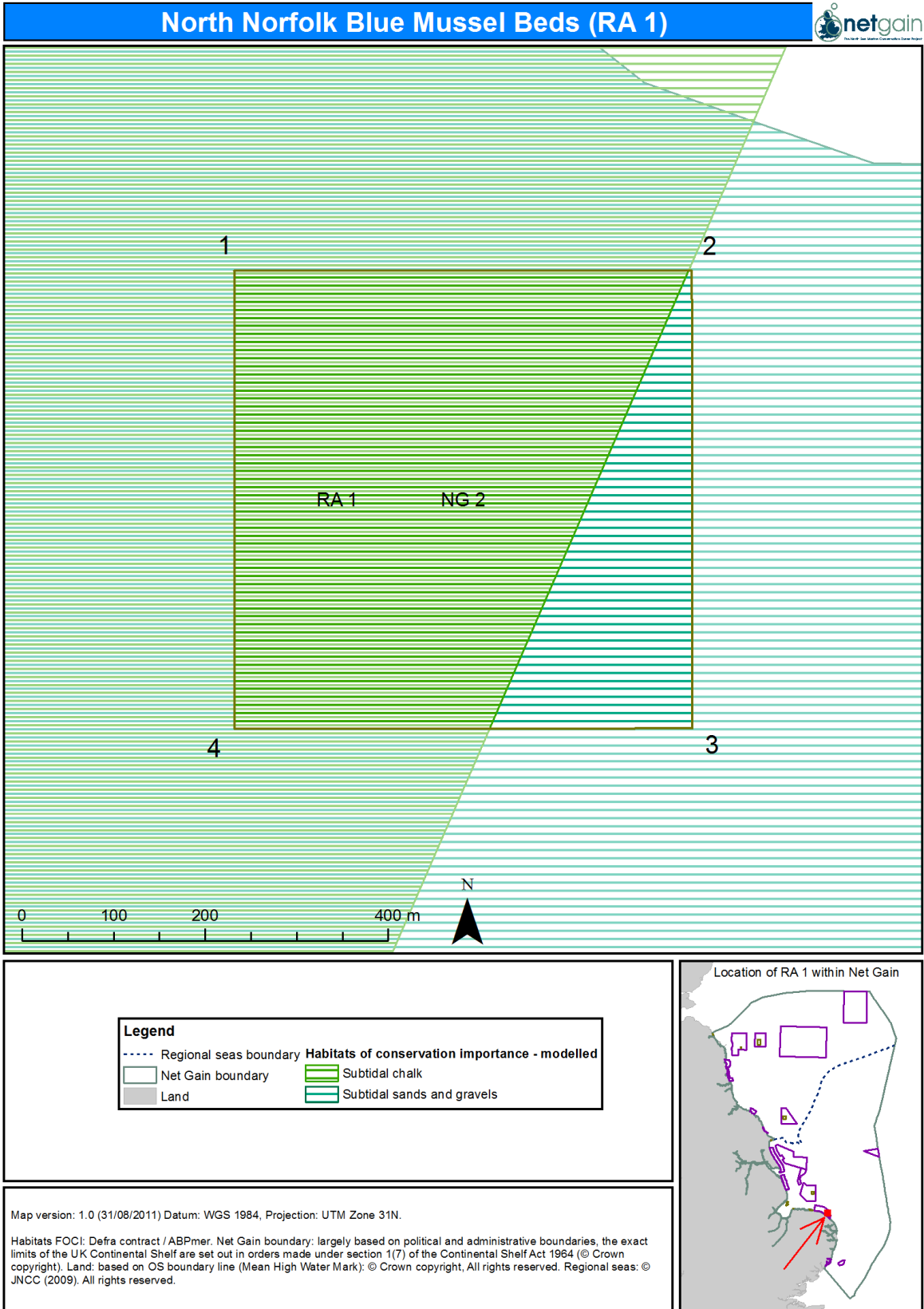


Figure 7.155 FOCI habitat present within rRA 1

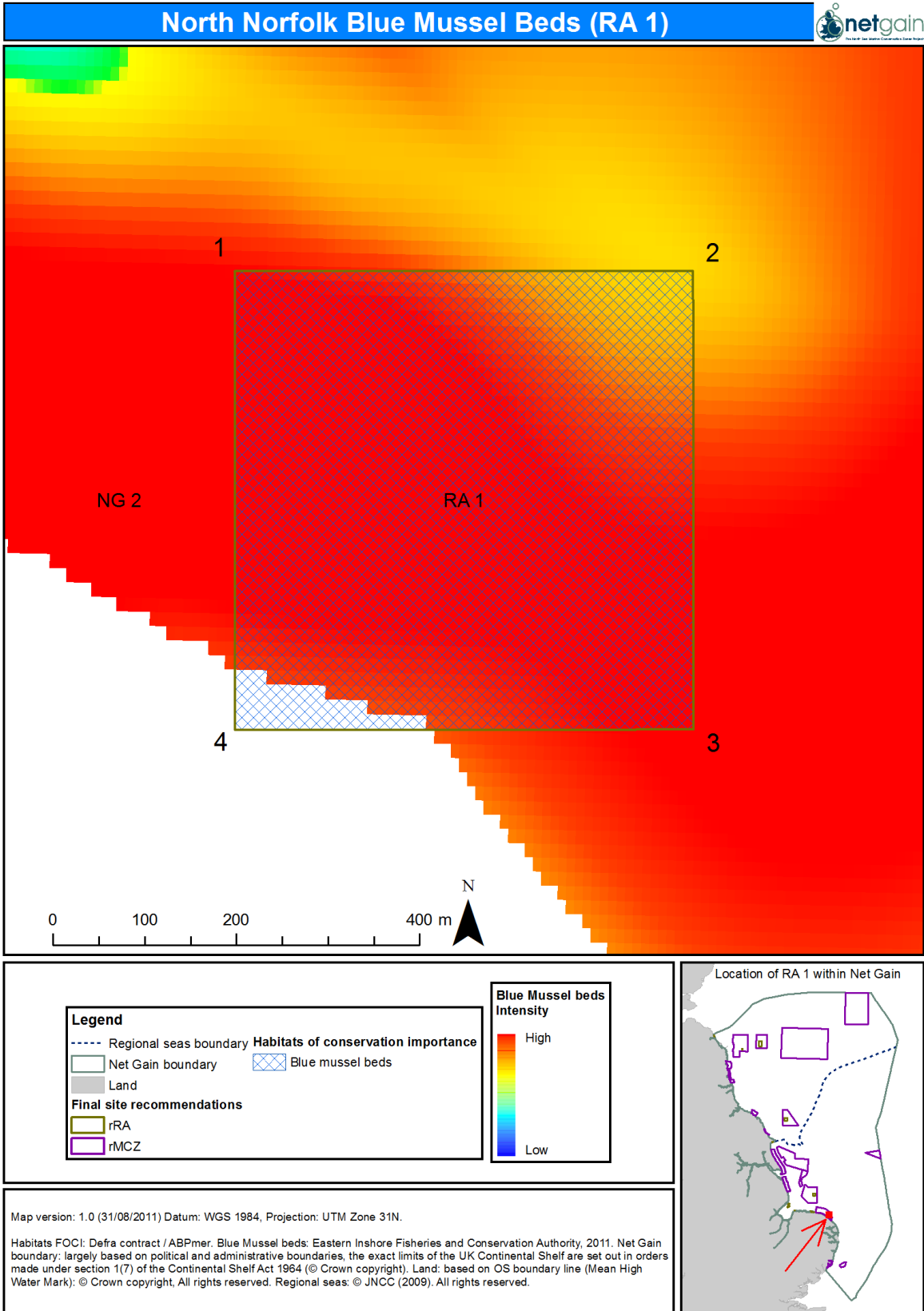
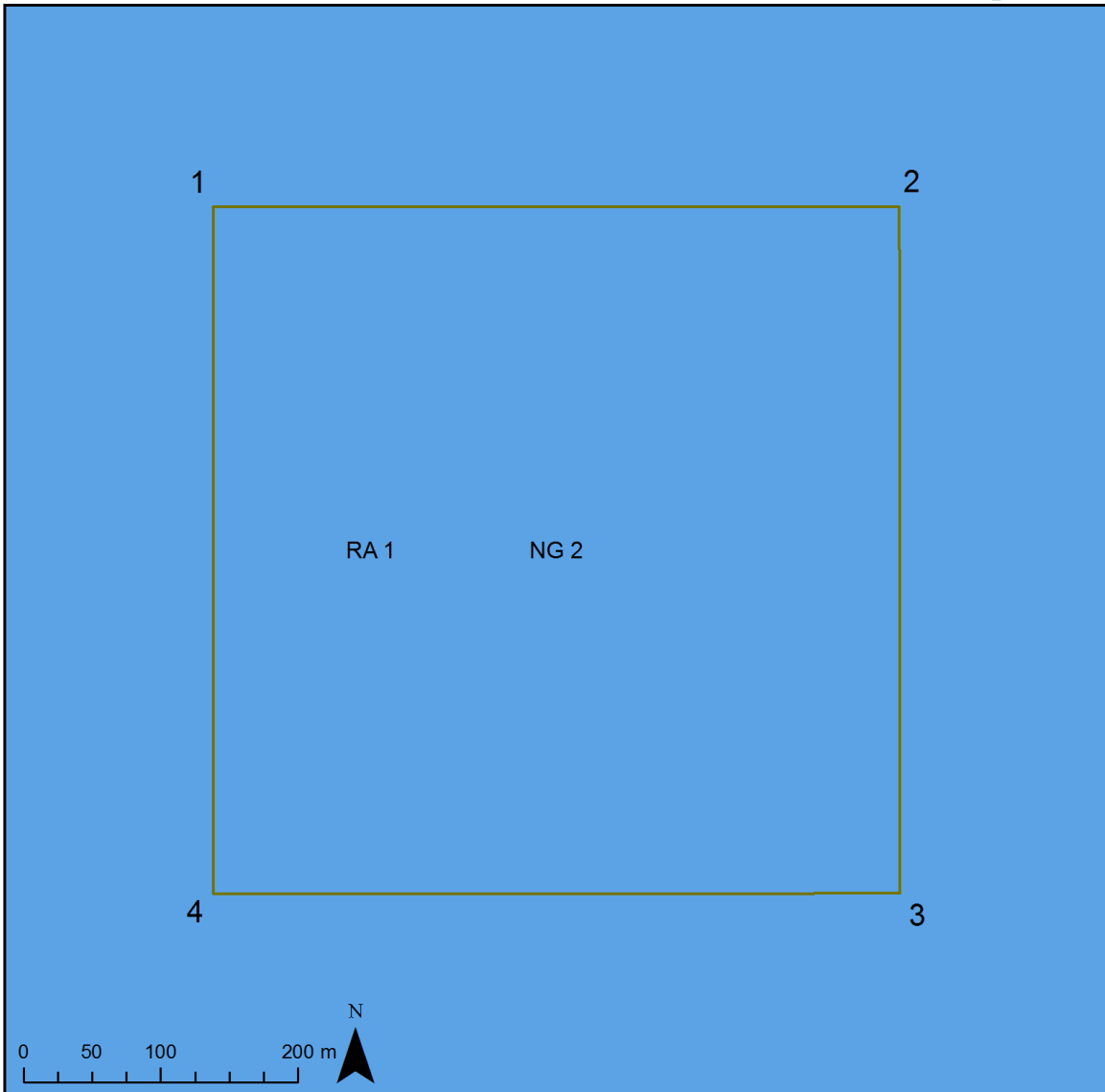
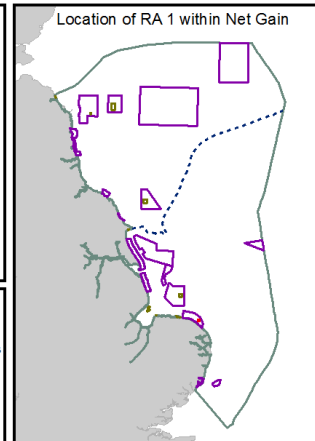


Figure 7.156 Extent of blue mussel bed data provided by Eastern IFCA

North Norfolk Blue Mussel Beds (RA 1)



Legend	
-----	Regional seas boundary
□	Net Gain boundary
□	Final site recommendations
□	rRA
□	rMCZ
■	Depth class based on LMW Mark (m)
■	<= -5
■	<= 0
■	<= 5
■	<= 10
■	<= 15
■	<= 20
■	<= 30
■	<= 40
■	<= 50
■	<= 75
■	<= 100
■	<= 150
■	<= 200



Map version: 1.0 (31/08/2011) Datum: WGS 1984, Projection: UTM Zone 31N.
 Contains data from the Ordnance Survey © Crown Copyright and database right 2011. Ordnance Survey 100022021. Contains data from the UK Hydrographic Office © Crown Copyright and/or database rights. Reproduced by permission of the Controller of Her Majesty's Stationery Office and the UK Hydrographic Office (www.ukho.gov.uk). Admiralty Charts © Crown Copyright, 2011. All rights reserved. License No. EK001-GOV001. NOT TO BE USED FOR NAVIGATION. Contains UKHO Law of the Sea data © Crown copyright and database right. Net Gain boundary: largely based on political and administrative boundaries, the exact limits of the UK Continental Shelf are set out in orders made under section 1(7) of the Continental Shelf Act 1964 © Crown copyright. Land: based on OS boundary line (Mean High Water Mark): © Crown copyright, All rights reserved. Regional seas: © JNCC (2009). National limits: UKHO. Contains UKHO Law of the Sea data © Crown copyright and database right.

Figure 7.157 Bathymetry of rRA 1

Site boundary

The site boundary is a 500m x 500m polygon that covers high abundance areas of blue mussel beds from available IFCA survey data. The site was set to be landward as much as possible of the 3nm limit, while still maintaining high abundance. Up to the 3nm limit is currently a 'no trawl' area so potential disruption from trawling occurring outside of the 3nm limit would be minimised (if not avoided altogether). The site lies within NG 2 providing a buffer for protection of the site should it be designated.

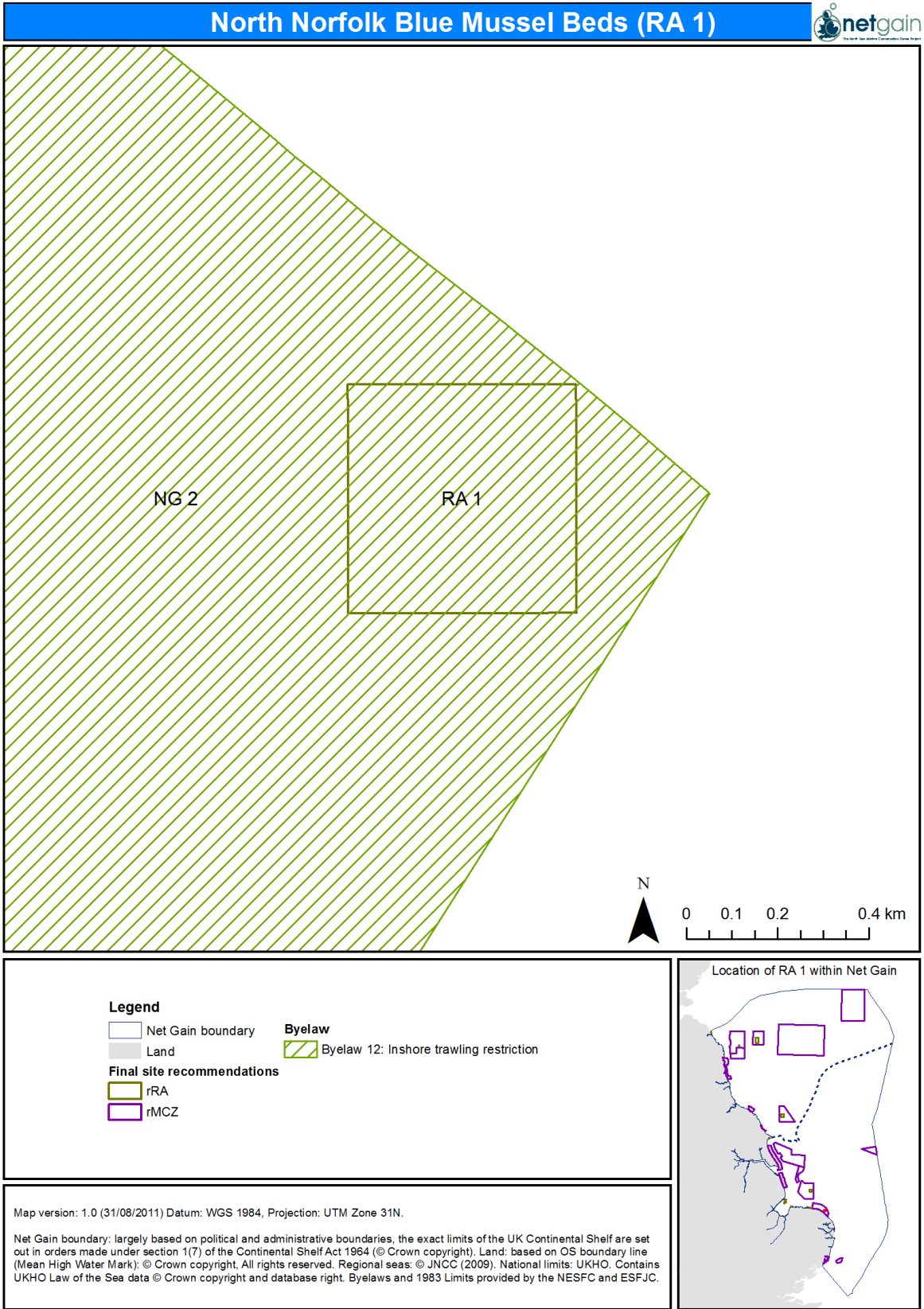


Figure 7.158 rRA 1 site boundary with associated fishery management location

Conservation objectives

Table 7.154 Conservation objectives for site rRA 1, A3.2: Moderate energy infralittoral rock

Section	
1 Conservation Objective	Moderate energy infralittoral rock is exposed rocky or boulder shores found on the southwest and west coasts of Britain and Ireland and on the northeast English coast. Subject to natural change, recover the Moderate energy infralittoral rock in the area marked on map Figure 7.154 to reference condition, such that:
2 Attributes and parameters (indicated by *)	<p style="text-align: center;"><u>Habitat</u></p> <p>the</p> <ul style="list-style-type: none"> • extent, • diversity, • community structure, • natural environmental quality*, and • natural environmental processes* <p>representative of Moderate energy infralittoral rock in the biogeographic region are recovered and the moderate energy infralittoral rock area marked on map Figure 7.154 to reference condition, such that the feature makes its contribution to the network.</p>
Advice on operations	
3 Human activities	Reference areas should be managed to remove or prevent all extraction, deposition or human-derived disturbance and damage.

Table 7.155 Conservation objectives for site rRA 1, Blue mussel beds

Section	
1 Conservation Objective	Blue Mussel beds (including intertidal beds on mixed and sandy sediments) are on the UK List of Priority Species and Habitats (UK BAP) and OSPAR List of Threatened and/or Declining Species and Habitats. Subject to natural change, recover the Blue Mussel beds (including intertidal beds on mixed and sandy sediments) to reference condition by 2020, and recover the blue mussel beds in the area marked on map Figure 7.156 to reference condition, such that: :
2 Attributes and parameters (indicated by *)	<p style="text-align: center;"><u>Habitat</u></p> <p>the</p> <ul style="list-style-type: none"> • extent, • diversity, • community structure, • natural environmental quality*, and • natural environmental processes* <p>representative of the blue mussel beds in the biogeographic region are recovered and the blue mussel beds area marked on map Figure 7.156 is recovered to reference condition, such that the feature makes its contribution to the network.</p>
Advice on operations	
3 Human activities	Reference areas should be managed to remove or prevent all extraction, deposition or human-derived disturbance and damage.

Table 7.156 Conservation objectives for site rRA 1, Subtidal chalk

Section	
1 Conservation Objective	Subtidal chalk is on the UK List of Priority Species and Habitats (UK BAP). Subject to natural change, recover the subtidal chalk to favourable condition by 2020 and maintain thereafter], and recover the subtidal chalk in the area marked on map Figure 7.155 to reference condition, such that:
2 Attributes and parameters (indicated by *)	<p style="text-align: center;"><u>Habitat</u></p> <p>the</p> <ul style="list-style-type: none"> • extent, • diversity, • community structure, • natural environmental quality*, and • natural environmental processes* <p>representative of the subtidal chalk in the biogeographic region is recovered and the subtidal chalk area marked on map Figure 7.155 is recovered to reference condition, such that the feature makes its contribution to the network.</p>
Advice on operations	
3 Human activities	Reference areas should be managed to remove or prevent all extraction, deposition or human-derived disturbance and damage.

Table 7.157 Conservation objectives for site rRA 1, Subtidal sands and gravels

Section	
1 Conservation Objective	Subtidal sands and gravels are on the UK List of Priority Species and Habitats (UK BAP). Subject to natural change, recover the subtidal sands and gravels to favourable condition by 2020 and maintain thereafter, and recover the subtidal sands and gravels in the area marked on map Figure 7.155 to reference condition, such that:
2 Attributes and parameters (indicated by *)	<p style="text-align: center;"><u>Habitat</u></p> <p>the</p> <ul style="list-style-type: none"> • extent, • diversity, • community structure, • natural environmental quality*, and • natural environmental processes* <p>representative of the subtidal sands and gravels in the biogeographic region are all recovered and the subtidal sands and gravels area marked on map Figure 7.155 is recovered to reference condition, such that the feature makes its contribution to the network.</p>
Advice on operations	
3 Human activities	Reference areas should be managed to remove or prevent all extraction, deposition or human-derived disturbance and damage.

Sites to which this site is related

This section considers neighbouring rMCZs and other MPAs that overlap with, or are adjacent to (i.e. within c.5km) of the rMCZ under discussion. Other sites that are linked with this rMCZ but which are outside of the scope of this section as defined are considered under 'Connectivity' within ENG requirement section.

This site currently lies within NG 2 and no other MPAs.

Levels of stakeholder support

At the second Large Group Meeting (July 2011) stakeholders (who were assigned to groups to discuss the sites from their own Regional Hubs) were asked to provide **feedback on the consensus support** for the site (scoring 1 for 'strongly against' through to 4 for 'strongly support'), an indication of the likely level of contention that designation of the site might have (scored as 'L', 'M' or 'H'), and a view on the group's confidence in the underlying data used to develop site proposals (again scored as 'L', 'M' or 'H').

The site received good support, the consensus views being that the site should be rated at '3' or '4' ('support' or 'strong support'). The MCS noted that, if it could be demonstrated that the blue mussel bed was overlying soft sediments then they would be strongly in support of the site. Stakeholders in the other group considering this site also tempered their support for the site with a comment that they had reservation over the accuracy of the modelled data and that this would potentially limit their support for the site.

In terms of the underlying data at the site stakeholders' confidence was 'high' for the blue mussel beds themselves, but was 'low' for modelled (habitat FOCI) data across the site. It was suggested that more research is needed in the area and additional guidance over the classification of blue mussel beds (in relation to the substrate they are associated with) from the SNCBs is required.

The potential level of contention surrounding the site was felt to be 'low' – the site lies within a no-trawl zone (and so significant fishing interests are not compromised) and it avoids (existing and planned) infrastructure in the area.

Table 7.158 Supporting documentation

Information	Type of information	Source
Blue mussel beds	Survey	Eastern IFCA, 2011
Broad-scale habitat	Modelled data	Mc Breen, 2010
Subtidal sands and gravels, Subtidal chalk	Modelled data	Tyler-Walters, et al. 2009

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