

Pagham Harbour rMCZ no 25.1

Marine Conservation Zone: Selection Assessment Document

Version and Issue date	Amendments made
V1.0 07.09.11	Draft final recommendations refined by the RSG and Local Groups in July 2011 and finalised by the RSG 2/3 August 2011.

1. Site name Pagham Harbour rMCZ no 25.1 Contains Pagham Harbour rRA no 11	3. Site surface area 270 ha 2.70 km
2. Site centre location ETRS89 N50 45' 46.500" W0 45' 52.680" N50 45.775' W0 45.878' (N.B. WGS 84 UTM 31N coordinates are provided in the map vertices)	4. Biogeographic region Eastern English Channel

5. Features proposed for designation within Pagham Harbour¹

Feature type	Feature name	Area / No. of records ²
Habitat FOCI	Seagrass beds	0.03 km ²
Species FOCI Low mobility	Defolin's Lagoon Snail (<i>Caecum armoricum</i>)	1 record
	Lagoon Sand Shrimp (<i>Gammarus insensibilis</i>)	3 records
Species FOCI High mobility	European Eel (<i>Anguilla anguilla</i>)	n/a

6. Features within Pagham Harbour not proposed for designation³

Feature type	Feature name	Reason
Broad-scale habitats	A2.1 intertidal coarse sediment	Already protected
	A2.3 intertidal mud	Already protected
	A3.2 mod energy infralittoral rock	Very small amount of habitat
	A5.1 subtidal coarse sediment	Very small amount of habitat
	A5.3 subtidal mud	A minuscule amount of this habitat shows up in the project data but this would need verification
Species FOCI Low mobility	Native Oyster (<i>Ostrea edulis</i>)	Not considered appropriate as a feature
Species FOCI High mobility	Smelt (<i>Osmerus eperlanus</i>)	Not considered appropriate as a feature
	Undulate Ray (<i>Raja undulata</i>)	Not considered appropriate as a feature
Geology	Pagham harbour	Verification with NE suggested that this feature is already considered within the existing designations.

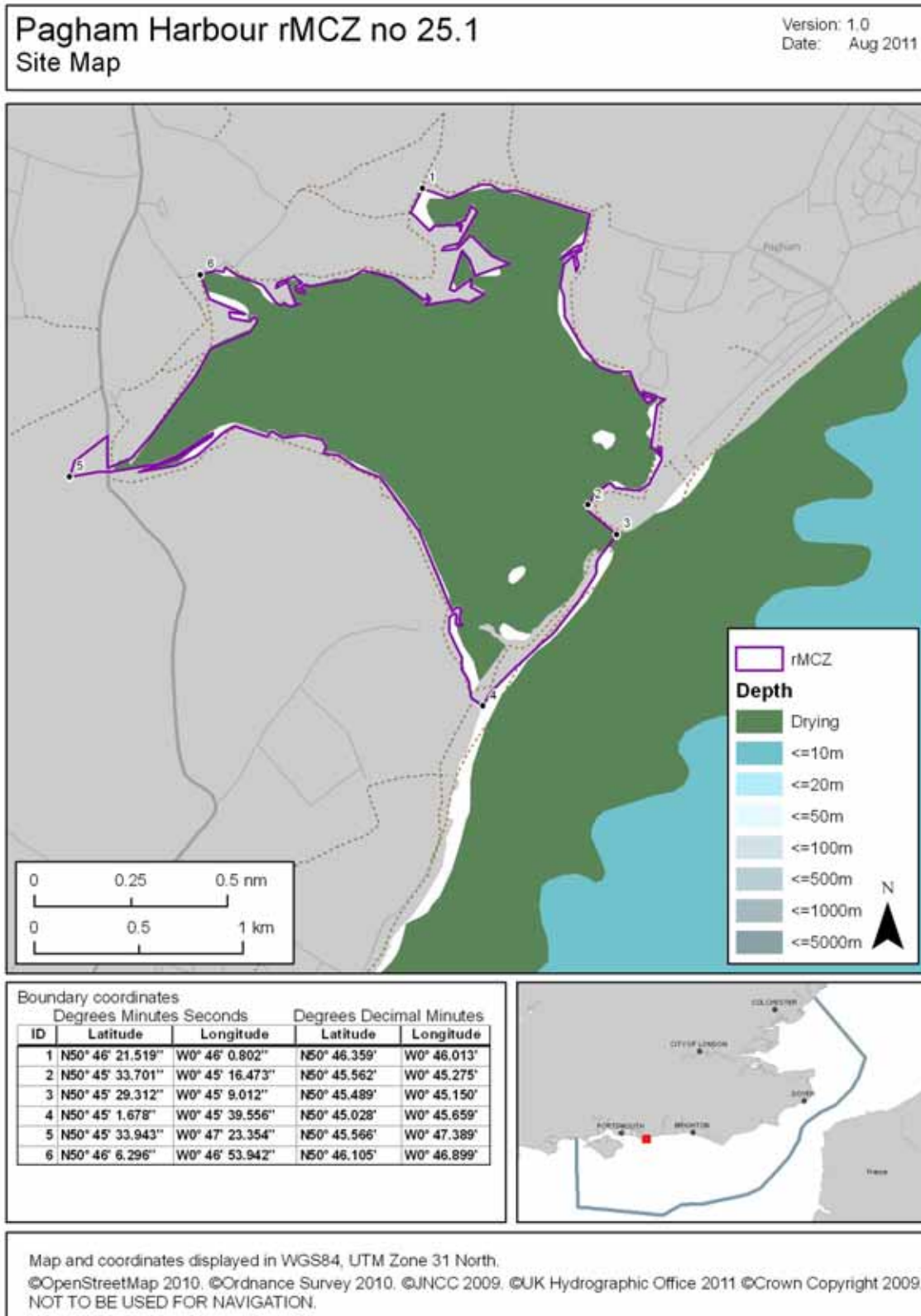
¹Sources of information relating to these features are listed in Section 13.

²Areas have been calculated according to spatial data, but where data are not from actual survey data these figures are indicative only. A "record" is a survey point where a single individual, population or habitat has been found.

³ Features may occur in both tables (sections 5 & 6) if the rMCZ overlaps with an existing MPA where the features are protected.

Pagham Harbour rMCZ no 25.1

7. Map of site



8. Site summary

This site builds upon the extensive protection provided by the SSSI and SPA to the intertidal salt marsh and tidal mudflat habitats within the harbour and its geologically mobile shingle spit at the harbour mouth. The spit is one of only two known locations in the Balanced Seas project area for the exceptionally rare Defolin's Lagoon Snail (*Caecum armoricum*). Previously only known in the UK from a single record on The Fleet in Dorset, this species was found in 2007 in the upper shore shingle on the westernmost part of the spit, above MHW (Pain *et al.*, 2008). The species is not protected under existing designations, so is recommended as a designated feature for this rMCZ. The site where the snail was found has also been suggested as a recommended Reference Area, and this would mean stricter protection for this small part of the rMCZ if both recommendations go forward for designation. Within the harbour itself, the sea grass beds are considered to form an important part of the intertidal and subtidal environment and both Native Oyster (*Ostrea edulis*) and European Eel (*Anguilla anguilla*) elvers are known to be present. The Lagoon Sand Shrimp (*Gammarus insensibilis*) occurs in Ferry Pool, a small water body above the Mean High Water mark (Ordnance Survey data) on the west side of the Harbour and is unprotected by the SSSI. The Harbour is also noted for its high benthic species richness and benthic biotope richness.



In their final meeting, the RSG stressed that the recommendation for the rMCZ was based upon the understanding that **proposed coastal defence work would not be affected**, as stated by the public authorities.

This site has considerable existing protection in the form of existing designations and Local Nature Reserve Byelaws that manage activities and public access. These are considered to be adequate to achieve the draft conservation objectives for the site. The recommended Reference Area is described in a separate sheet.

9. Detailed site description



The following is a description of the site based on extracts from literature held by the Balanced Seas Project and stakeholder correspondence. It does not constitute a complete literature review or ecological description of the site.

Pagham Harbour is the easternmost of a series of drowned river valleys and shallow estuaries, including Poole Harbour in the west, the Solent, and Langstone and Chichester Harbours, that characterize the coastline of southern central England. Although the intertidal area has had much the same width throughout history, both the outlet and the form of delta have altered their positions, which has changed the shape of the shingle spit and affected the form of the intertidal area. Pagham Harbour is well known for its geologically mobile shingle spit which occurs in a delta-like form with a series of exposed ridges or 'fulls'. The spit formation is associated with both longshore and offshore sources of sediment deposition and is periodically breached by the sea, though due to anthropogenic influence, the natural sediment supply has largely ceased (May, 2003). This excellent example of such an important geomorphological feature is already protected under the existing designations.

The Harbour is very important for its intertidal mudflats and associated invertebrate communities but all the ENG listed broad-scale habitats within the site are protected under existing designations.

The site is of very high importance for the rare Defolin's Lagoon Snail (*Caecum armoricum*) as one of only two locations where this species has been recorded within the Balanced Seas project area (and therefore essential to include for under the replication criteria) (see FOCI map). Previously only known in the UK from a single record on The Fleet in Dorset, this species was found in 2007 in the upper shore shingle on the westernmost part of the spit, above MHW (Pain *et al.*, 2008). A more detailed

Pagham Harbour rMCZ no 25.1

examination of the site is needed in order to determine the vertical distribution of the species down the shore (Pain *et al.* 2008). Following investigations of the distribution records for the species by members of the Sussex Local Group, it was found that the data point in the national contract data layers was incorrect (likely through a mapping projection error) and one of the original recorders was contacted to verify the precise coordinates, which are those published by Pain *et al.* (2008). The location where the snail was found has been recommended as a Reference Area, and if this goes forward, it would mean that this part of the rMCZ would have stricter protection. The RSG has recommended that further survey work is essential to verify the presence of this species prior to designation.

The Native Oyster (*Ostrea edulis*) is found throughout Pagham Harbour (as well as offshore areas surrounding it), although specific locations are unknown (Pagham Nature Reserve Warden email, 24.03.2011). The seagrass beds are an important part of the intertidal and subtidal environment and are not currently designated for protection. There is a possibility that they may be remnants of plantings in the mid-1950s when the local wildfowlers tried to reintroduce seagrass into Pagham Harbour (email from Southern Wildfowlers and Wetlands Management Association (SWAWMA) 13.03.11).

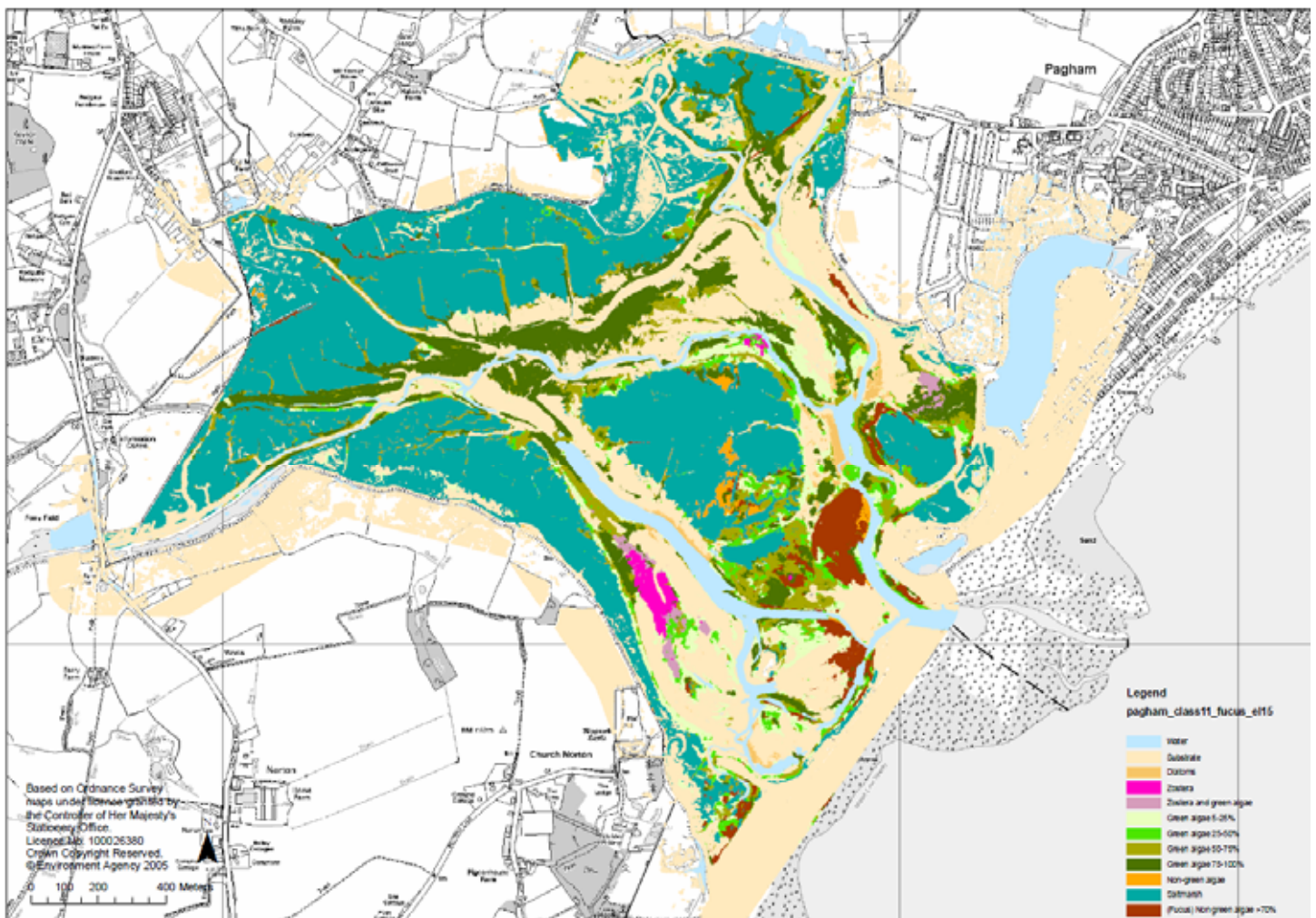


Figure 1. Distribution of seagrass *Zostera*, with algae, in Pagham Harbour 2005 (courtesy of the Environment Agency) – this shows broadly the same distribution for seagrass as shown by the project data set (see map below)

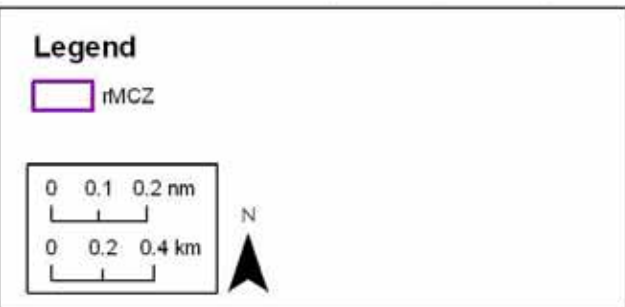
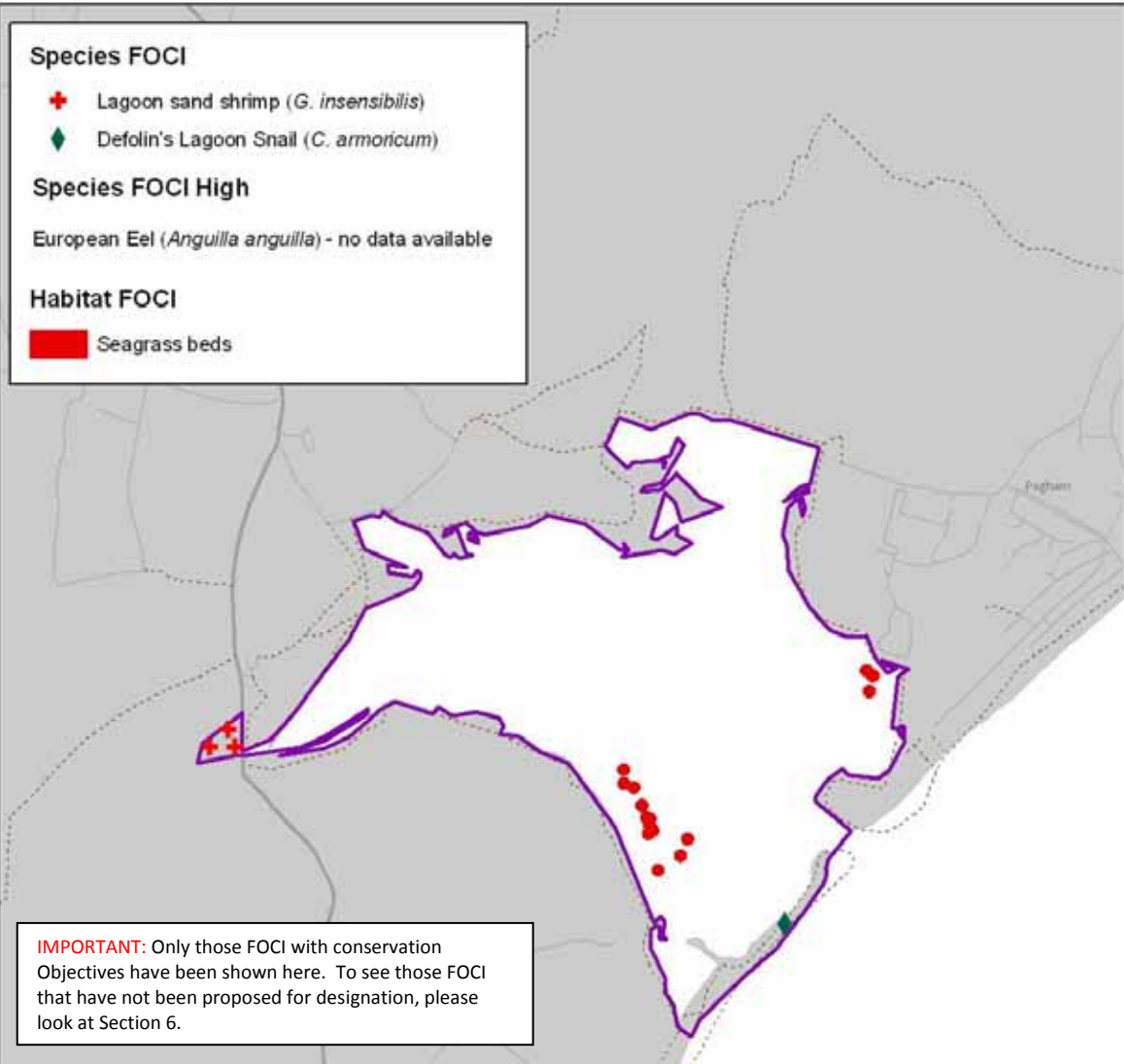
Pagham Harbour rMCZ no 25.1

Adult eels and elvers can be found in the riles that drain into Pagham Harbour, and the Harbour area is a place of transit for migrating eels (Southern Wildfowlers and Wetlands Management Association (SWAWMA) 13.3.11). The Balanced Seas only has very coarse scale data for the highly mobile species, as provided in the national contract data (DEFRA MB102 2B), which cannot be used to verify the presence of a species at regional or local levels. Therefore, stakeholder confirmation and anecdotal evidence are used here.

The harbour provides important habitats for foraging, breeding, loafing, moulting rafting and resting wildfowl, whilst acting as a nursery ground for particular fish species. A joint study between the Environment Agency and Portsmouth University in 2007 found that bass and mullet are the predominate species using Pagham Harbour with Black Bream, sand eels and wrasse among the less common species identified (Anon, undated). Grey Seal and Common Seal have been recorded in the Harbour (Pagham Harbour Local Nature Reserve notable species list). The shingle coastline also provides ideal conditions for breeding Common and Little Tern and other shorebirds, and roosting sites for waders. The near-shore waters provide important wintering grounds for species of waterfowl including important populations of Slavonian Grebe (Environment Agency 18.11.2010). National contract data layers (DEFRA MB102 2F) for biodiversity demonstrate that Pagham Harbour supports high benthic species richness and benthic biotope richness.

Pagham Harbour rMCZ no 25.1
Habitat and Species FOCI Conservation Objectives

Version: 1.0
Date: Aug 2011



Map and coordinates displayed in WGS84, UTM Zone 31 North.
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NOT TO BE USED FOR NAVIGATION.

Pagham Harbour rMCZ no 25.1

10. Site boundary

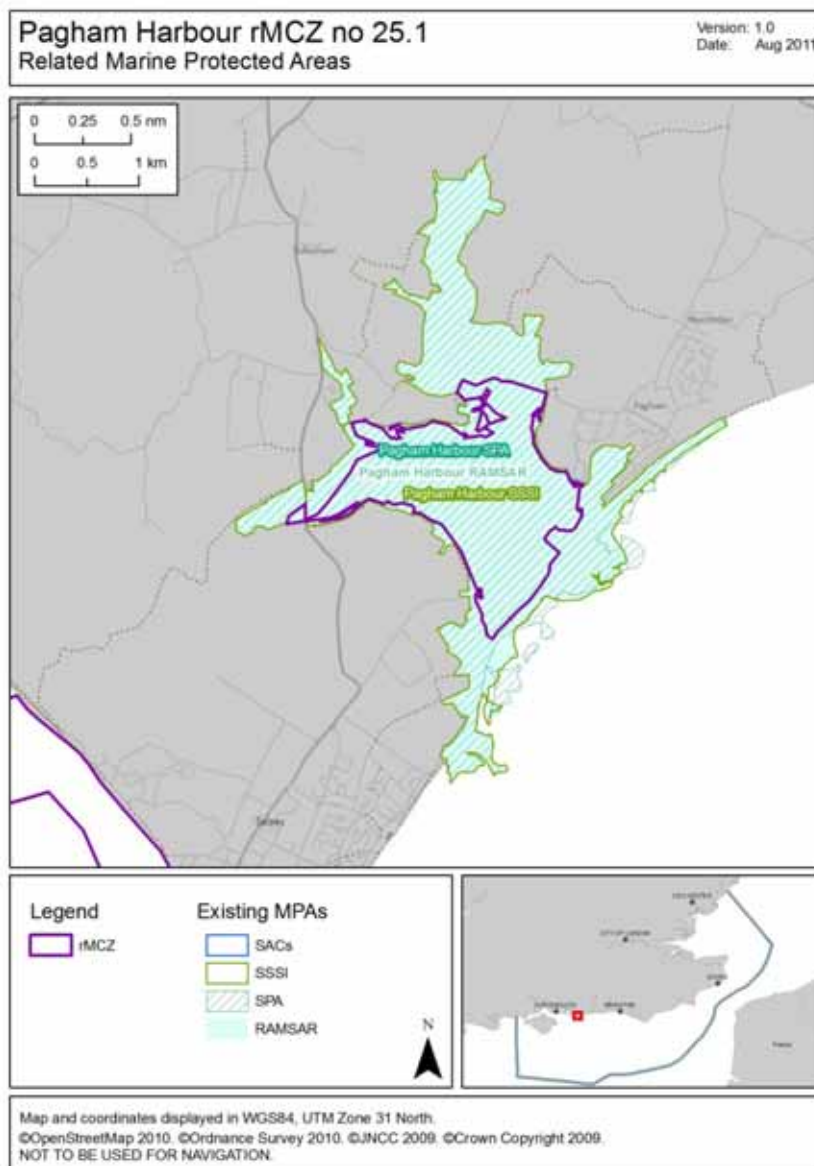
The landward boundary of the site is described by the Mean High Water mark (Ordnance Survey Data) following the harbour extent, except in the east where, to incorporate the Lagoon Sand Shrimp, the boundary has been extended to include Ferry Pool lying beyond the OS MHW mark line. The seaward boundary is drawn across the mouth of the harbour and then southwest to Church Norton, incorporating the inner part of the shingle spit; the boundary on the seawards side of the spit has been drawn along the MHW mark (nationally supplied Ordnance Survey 2010 dataset). Given the dynamic nature of the spit, further consideration will need to be given to the exact location of the boundary of this rRA.

11. Conservation objectives

Individual conservation objective forms for each feature can be found in Appendix 1. For a site-based summary of the conservation objectives and proposed management measures, please see the relevant section below.

12. Sites to which this site is related

This site overlaps with the Pagham Harbour Local Nature Reserve, SSSI, Ramsar and SPA. The rMCZ contains recommended Reference Area 11.



Pagham Harbour rMCZ no 25.1

13. Supporting documentation (information relating to ENG features only)

Information	Type of information	Source	Name of survey	Date
Broad-scale habitats	Modelled data	JNCC V.7 Combined UKSeaMap and MESH	Combined	June 2011
Seagrass beds	Survey	National contract data, DEFRA MB102 2C		31/07/2007
Native oyster (<i>O.edulis</i>)	Survey	National contract data, DEFRA MB102 2B	JNCCMNCR60000144	01/01/1982
European Eel (<i>Anguilla anguilla</i>)	Anecdotal evidence	Southern Wildfowlers and Wetlands Management Association		

References (additional information can be found in the bibliography)

- Anon (undated) Importance of Intertidal Habitat to Fish. Briefing concerning Environment Agency study of Pagham Harbour in 2007.
- ELLIS, J.R., READDY, L., SOUTH, A. 2010 *Accessing and developing the required biophysical datasets and data layers for Marine Protected Areas network planning and wider marine spatial planning purposes. Report No 15: Task 2B Distribution of highly mobile species.(Task 2B) DEFRA. London.*
- Environment Agency. Shorting briefing to Balanced Seas (18.11.2010) Pagham Harbour – Justification for Inclusion in Broad Area of Interest.
- MAY, V.K. 2003. 'Pagham Harbour' in *Geological Coastal Review 28*
- PAIN ET AL. 2008. Two further UK sites for *Caecum armoricum*, de Folin, 1869, formerly known only in The Fleet, Dorset, as a member of the interstitial 'springs' community. *Journal of Conchology* Vol. 39 No.6 pg 779.
- SEELEY, B., LEAR, D. HIGGS, S. NEILLY, M. BILEWITCH, J. EVANS, J. WILKES, P. & ADAMS, L. 2010. *Accessing and Developing the Required Biophysical Dataset and Data Layers for Marine Protected Areas Network Planning and Wider Marine Spatial Planning Purposes: Mapping of species with limited mobility (Benthic species). (Task 2B).* DEFRA, London.
- SEELEY, B., HIGGS, S., LEAR, D., EVANS, J., NEILLY, M., CAMPBELL, M., WILKES, P., ADAMS, L., 2010. *Accessing and Developing the Required Biophysical Dataset and Data Layers for Marine Protected Areas Network Planning and Wider Marine Spatial Planning Purposes. Report No 16: Mapping of Protected Habitats (MB102 Task 2C).* DEFRA, London.
- Surveyor's email JL. 27.07.2011. Re Draft report on Balanced Seas stakeholder meeting 20 July
- The Sussex Biodiversity Record Centre. 2007. An Annual Review of Wildlife Recording in Sussex. West Sussex.

14. Stakeholder Support

The RSG as a group reached consensus that this site should be put forward in their final recommendations.

Individual sectors wishing to note their support or concerns about the site recorded the following at the final RSG meeting in August 2011; their comments have been transcribed verbatim from the form that they completed:

SECTOR	ORGANISATION	COMMENT for Pagham Harbour rMCZ 25.1
Yachting	RYA	Support, subject to allaying local fears about any impact on coastal defence.
Kite Surfing	British Kite Surfing Association	Supported.
Sea Angling		No comment but broadly support.
Fisheries	Local Fisheries Representatives	Good support subject to clarification of sea defence situation.
Fishing - FPO, beam trawling		Good support.
Birds	RSPB	Support.
Wildlife Trusts	Hampshire Wildlife Trust	I support this site.
Marine Ecology	Seasearch	Strongly support this site for its various features including lagoon communities, rare in the region.
Marine Wildlife	Marine Conservation Society	<u>Support site.</u> Recover CO for all broadscale habitats to protect and recover from bottom towed fishing.
Statutory environmental	Environment Agency	EA support and are working closely with NE and Local Authorities on Adaptive Management Strategy to inform coastal management. NE

Pagham Harbour rMCZ no 25.1

		has advised that FCRM operations will not be stopped as a result of MCZ designation. Support need for more survey information.
Heritage and Archaeology	English Heritage	Support with usual provisions for I+E research as potential high.

15. Site summary of conservation objectives (COs) and proposed management measures

A conservation objective (CO) is a statement describing the desired quality of the feature. Existing MPAs in the UK use the term *Favourable Condition* to represent the desired state of their features. Some pressures caused by human activities may stop the feature attaining favourable condition if present at sufficient intensity.

MAINTAIN means that, the *stated levels of activity* currently occurring on the feature are considered acceptable, but features will be monitored and restrictions may have to be introduced if the condition declines.

RECOVER means that restrictions may be necessary on the activity causing the pressure, in order to allow the feature to recover to favourable condition. It does not necessarily mean that the activity will be prohibited, as other mitigation measures might be appropriate (e.g. change in gear type, reduction of intensity, seasonal restrictions, etc)

The table below documents the draft COs for ALL the features listed for protection within the site, as established by JNCC and NE through the Vulnerability Assessment (VA) process⁴ and then sense-checked at the national level⁵. Where a RECOVER objective is noted, the associated activity causing the pressure is indicated. In some cases, where data and information warrant it, the RSG chose to adopt the changes to COs recommended by the public authorities: Inshore Fisheries and Conservation Authorities (IFCAs), Marine Management Organisation (MMO), Environment Agency (EA) or Natural England. Changes were only accepted when recommended by these authorities and have been clearly noted. Where the VA has not yet been undertaken, or there is considerable uncertainty surrounding the accuracy of the information being used to recommend a change to the conservation objective, it has been noted as 'TO BE ASSESSED'. Local and regional stakeholders were given the opportunity to comment on the COs and potential management measures and to provide additional information that might not have been taken into account in the VA work.

⁴ The process of establishing conservation objectives is outlined in the [Conservation Objectives Guidance](#) (JNCC /NE 2011)

⁵ VA results were standardised across all four regional projects but the fisheries activity data is still undergoing assessment.

Pagham Harbour rMCZ no 25.1

Feature	Draft CO	Activity exerting pressure	IFCA/MMO/EA/NE Comments	Stakeholder comments on draft COs and potential management measures
Seagrass beds	MAINTAIN			<p>LG members thought that there are no activities that impact the seagrass beds because of the byelaws that prevent certain forms of public access and restrict certain activities (Pagham Harbour Local Nature Reserve Byelaws, 1997)</p> <p>LG noted that silting up of the harbour may impact the sea grass; – lack of activities may be causing the silting effect as it is not being cleared away</p>
Defolin’s Lagoon Snail (Caecum armoricum)	MAINTAIN (for the MCZ without the RA)		<p>For the dMCZ (i.e. with no reference area), the CO for this species would be maintain as Natural England considers existing activities and management practices will maintain the species in favourable condition</p> <p>SNCBs have stated that MCZs and RAs will not affect coastal defence.</p>	RSG recommends a survey of the species be completed as soon as possible.
Lagoon sand shrimp (Gammarus insensibilis)	RECOVER MAINTAIN	Sewage disposal	EA management	RSG clarified that West CC have stopped topping up the pool with nutrient enriched water and so management is already addressing it – CO changed to MAINTAIN.
European Eel (Anguilla anguilla)	MAINTAIN		EA regulations are in place	

16. Evolution of the site

This site was originally identified for inclusion due to the presence of several highly restricted ENG FOCI species (Starlet Sea Anemone, Lagoon Sand Shrimp and Defolin's Lagoon Snail, all of which occur above MHW line from OS data) but it was not recommended within the developing network until the 3rd Progress Report due to uncertainty regarding the inclusion of species occurring above MHW. The site was simultaneously proposed as a draft Reference Area for the same species (please see rRA 11 for a description of the evolution of this rRA). The Starlet Sea Anemone was removed from the list of features for MCZ protection after it was revealed to be protected under existing designations.

During the Balanced Seas-led and some public authority-led meetings with local stakeholders in 2011, the survey record locations for Defolin's Lagoon Snail were discussed, and it was discovered that there was some confusion regarding the actual locations of the snail and thus the appropriate boundaries for both the MCZ and the Reference Area. Defolin's Lagoon Snail records held by the project were subsequently checked by the original recorder and the correct (single) location clarified and recorded (Light, J e-mail 27/7/11). The site boundary was therefore drawn to include the relevant part of the shingle spit. The boundary was also adjusted to include Ferry Pool where the Lagoon Sand Shrimp records occur. In their final meeting, the RSG stressed that the recommendation for the rMCZ was based upon the understanding that **proposed coastal defence work would not be affected**, as stated by the public authorities, and that a further survey of the snail should be undertaken before the rMCZ is taken forward.

17. Implications for stakeholders

As a result of a rather difficult history of management of the existing protected areas, local residents have expressed major concerns about proposals for further protection of this area as there are fears that this will restrict a range of activities. These concerns have resulted in extensive lobbying of the project team, the public authorities involved in the area, and local Members of Parliament. Issues associated with this site are as follows:

- The single record of Defolin's Lagoon Snail in the rMCZ (one of only two records in the project area) is on the shingle spit which is partially responsible for the rapid coastal erosion to the north of the harbour and which is also used as a source of material to provide shoreline defence. Residents have requested that the spit be breached in the location of one of the original harbour openings. Public authorities have stated that protection of the Defolin's Lagoon Snail in either an MCZ or Reference Area should not affect the planned coastal defence work. The RSG has stated that it fully understands the concerns about coastal defence and believes work to prevent shoreline erosion should not be prevented.
- Pagham Harbour area has heavy recreational use in the form of walkers, bird watchers, and some water sports (although use of the Harbour for sailing, kayaking and other water sports is limited). The recreation sector is very concerned that rMCZ status would limit these activities, although they have been reassured that the draft Conservation Objectives indicate that this will not be the case.

This list represents only the major issues associated with the site. To see all stakeholder discussions, please refer to the Balanced Seas RSG and Local Group meeting reports at www.balancedseas.org.