The Wash & North Norfolk Coast European Marine Site. Condition Assessment Summary, September 2008

Overview

The favourable condition tables which accompany the conservation objective for each interest feature of The Wash & North Norfolk Coast European marine site were published earlier this year, following a process of consultation with the Advisory Groups, Management Group, Waterbird study group, fishing industry meetings and scientific workshops. These updated favourable condition tables are available on the European marine site website:

http://www.esfjc.co.uk/ems/pages/ems.htm

Since then a condition assessment has been made for the Special Area of Conservation (SAC) and 3 Special Protection Areas (North Norfolk, The Wash and Gibraltar Point SPAs) that comprise The Wash & North Norfolk Coast European marine site. This assessment has only focussed on European interest features. It hasn't considered those features of interest of the 3 component Sites of Special Scientific Interest (North Norfolk, The Wash and Gibraltar Point SSSIs) which are not also European interest features.

Overall we consider the assessment is positive. In particular there are significant improvements in the mussel and cockle communities of the intertidal mudflats and sandflats SAC feature of The Wash which is a very significant achievement given the very poor state of mussel and cockle stocks and the populations of shellfish-eating birds that depend upon them that persisted throughout the 1990s. This reflects the significant progress made by the Fishing Industry, ESFJC and Natural England in developing sustainable management measures which resulted in the agreement of the Shellfish Policies earlier this year. Other successes include a big increase in the breeding population of the common seal which have increased by 50% over the reporting period. Wintering waterbird assemblages (>20,000 waterfowl and seabirds feature) in the North Norfolk and The Wash SPAs have increased significantly by 403% and 56% respectively. Also little tern numbers (Annex 1 breeding bird feature) have been increasing consistently at Gibraltar Point since the site was designated reaching up to 52 pairs during the reporting period.

The assessment has indicated that there are areas where there are concerns. In the North Norfolk SPA breeding little tern and ringed plover have been assessed as unfavourable declining due to significant declines in populations and in The Wash shelduck has also been judged unfavourable declining for this reason. Similarly, common seal has been assessed as unfavourable declining overall due to a significant decline in the moulting population which mirrors trends elsewhere in the UK but contrasts markedly with the Wadden Sea where the population is steadily increasing. A substantial reduction in the cockle stock on le Strange Estate in The Wash linked to unsustainable fishing practices has resulted in the intertidal mudflat and sandflat being assessed as unfavourable declining. Although not yet assessed under Common Standards Monitoring guidance (and therefore recorded as 'not assessed' in this assessment) in certain areas of The Wash loss of intertidal flat extent and unfavourable changes to topography may be occurring, due to accretion of saltmarsh over the intertidal flats and erosion of the flats. We are concerned these will be exacerbated by sea level rise and lead to coastal squeeze. There are also concerns that water quality impacts may be occurring at Snettisham Lagoons. Erosion of the sand dune in front of Seacroft Marsh at Gibraltar Point is also putting the upper saltmarsh habitat behind at risk (Atlantic salt meadow feature).

Please also note that in several cases it has not been possible to assess against Common Standards Monitoring attributes due to a lack of data. This is particularly the case for the

extent attributes and other SAC attributes for Gibraltar Point and the North Norfolk Coast. We have highlighted where this is the case and will be seeking to put in place monitoring programmes over the next reporting cycle to fill these gaps.

The assessment uses a 'default-based' approach whereby an unfavourable assessment for one attribute causes that feature and the site as a whole to become unfavourable. This ensures that attention is drawn to those parts of the site where management action is required to restore condition. This means that overall assessments are as follows:

Gibraltar Point SPA	
Breeding Annex 1 birds	Favourable
Regularly occurring migratory birds	Favourable
SPA review additional features: knot and assemblage of > 20,000 waterfowl & seabirds	Favourable
Overall assessment:	**Favourable**

The Wash SPA	
Breeding Annex 1 birds	Favourable
Assemblage of >20,000 waterfowl & seabirds	Favourable
Non-breeding Annex 1 birds	Favourable
Regularly occurring migratory birds	Unfavourable declining (13 sub-features: of which 1, shelduck, is unfavourable declining, turnstone is very close to threshold for unfavourable declining, but remainder are all favourable)
Overall assessment:	**Unfavourable declining**

North Norfolk SPA	
Breeding Annex 1 birds	Unfavourable declining (little tern and ringed plover, common tern unfavourable no change, 5 other sub-features all favourable or unfavourable recovering)
Regularly occurring migratory birds	Favourable
Assemblage of >20,000 waterfowl & seabirds	Favourable
Overall assessment:	**Unfavourable declining**

The Wash & North Norfolk Coast	
Samphire and other annuals colonising mud & sand	Not assessed.
Atlantic salt meadows	Not assessed (but concerns over upper marsh at Gibraltar Point due to erosion of sand dune in vicinity of Seacroft Marsh)
Mediterranean saltmarsh scrub	Not assessed.
Lagoons (Snettisham)	Not assessed (but concerns over potential impact on water quality of lagoons & unregulated development of new quays / jetties on extent of lagoons)
Intertidal mudflats and sandflats	Unfavourable declining (14 attributes in total, one unfavourable declining due to loss of

	cockle from le Strange. 7 in The Wash assessed as favourable or unfavourable recovering. 6 not assessed. Significant potential concerns highlighted over loss of habitat due to saltmarsh accretion, mudflat erosion & seal level rise impacts, also potential for impact from pacific oyster)
Subtidal sandbanks	Not assessed (6 attributes in total, 2 not assessed, 4 are favourable in The Wash only. However, potential concerns over apparent significant change in sediment in north-western and south-eastern Wash that requires further investigation)
Reef	Favourable (but potential impact from towed gears being addressed through ESFJC byelaw)
Large shallow inlet & bay	Not assessed (4 attributes in total, 2 not assessed, 2 are favourable)
Common seal	Unfavourable declining (due to decline in moult population. Of remaining 3 attributes, two are favourable, one not assessed)
Otter	Not assessed overall (5 attributes in total, 3 not assessed, 2 attributes for which information is available have been assessed as favourable and unfavourable recovering)
Overall SAC assessment:	**Unfavourable declining**

The assessment indicates that there are issues that need to be addressed. In particular we need to undertake further investigation to understand the declines in little tern and ringer plover populations in Norfolk and shelduck and turnstone populations in The Wash. Similar investigation is required to understand the decline in the common seal population. In each of these cases it will be important to determine as far as possible what is driving these declines eg are they linked to human activities or natural change? are they driven by site-based factors or are national or international factors likely to be involved? In other cases, the cause for the unfavourable assessment is understood, such as the loss of cockle from le Strange, and we are seeking to put in place management to address the issue. In relation to the reef feature, although currently considered favourable, potential impacts on this feature from shrimp trawling and mussel seed dredging have been identified and work is in progress to develop a closed area byelaw to protect core areas from towed gear impacts.

Where it has not been possible to make a common standards monitoring assessment but potential concerns have been identified further dialogue with competent authorities and stakeholders will be required to further understand the nature of the perceived problem, identify further work required to investigate this and develop solutions. This is the case for the issues surrounding loss of intertidal flat habitat in The Wash and likely impacts of sea level rise. In several cases management action is already in progress, for example discussions over impacts on Seacroft Marsh at Gibraltar Point and investigations into water quality impacts at Snettisham lagoons.

A key issue will be seeking to fill gaps in our knowledge of attributes over the next reporting round to enable a more complete assessment in future. In the review of the Management Scheme it will be important to discuss these issues that have been identified, develop appropriate management measures where necessary and identify owners of actions.

This summary is planned to be presented at meetings of the Advisory Groups and Management Group, the Fishing Industry Associations, Waterbird Studies Group and Scientific working group. It will be placed on the European marine site website http://www.esfjc.co.uk/ems/pages/ems.htm. **We would be grateful for any comments by 14 November 2008 to Conor Donnelly at conor.donnelly@naturalengland.org.uk or Natural England, Spur B West, Block 7, Government Buildings, Chalfont Drive, Nottingham, NG8 3SN.**

Introduction

There is a requirement under the Habitats Directive to report on the condition of the site at 6 yearly intervals. The first report was made to Europe in 2007 based on the 2001-2006 reporting period. The next reporting period runs from January 2007 until December 2012, reporting in 2013. In addition to meeting the reporting requirements of the Directive, this information will also help government meet its commitments under the World Summit on Sustainable Development, Johannesburg 2002 and the Oslo Paris (OSPAR) convention 1992 to set up a network of well managed Marine Protected Areas. At a site level, this assessment will assist the Management and Advisory Groups in reviewing the Management Scheme of the European marine site and to help identify measures needed to address unfavourable condition of any feature and the owner/s of these measures.

The condition assessment is made on the basis of Common Standards Monitoring (CSM) guidance which was also used in updating the favourable condition tables accompanying the conservation objective for each interest feature. This guidance has been developed and agreed by each of the nature conservation agencies (Natural England, Countryside Council for Wales, Scottish Natural Heritage, Council for Nature Conservation and the Countryside and the Joint Nature Conservation Committee) to ensure a consistent approach to the assessment of the features of protected sites across the country.

The assessment of each site involves reviewing the information collected within the reporting cycle on the attributes of each of it's component interest features. This is then considered in light of the targets that have been set for these attributes. In making an assessment judgements must use CSM mandatory attributes (for example habitat extent is always mandatory) however it is also important to use those site-specific attributes that are important in highlighting local distinctiveness.

Whether or not the target is met and the extent to which it is or is not met is the basis for deciding whether the attribute is considered to be favourable or unfavourable or destroyed. In the case of an unfavourable assessment the trend is also identified (ie recovering, no change or declining). The attribute assessments are then aggregated up to determine the condition of the interest feature and then site as a whole. The basis of judgements when aggregating up is the 'default-based approach'. This means that if one attribute is unfavourable the whole feature becomes unfavourable. If one feature is unfavourable the whole site is considered unfavourable. The final outputs of the assessment are separate judgements on the condition of the SAC, North Norfolk SPA, The Wash SPA and Gibraltar SPA. Further information on the CSM condition assessment process is available at http://www.jncc.gov.uk/page-2236.

The condition assessment is undertaken using a proforma which provides an audit trail of the decision making process. In summary, the steps involved are:

1. Consider evidence available for each attribute.
2. Has target been met?
    a. Yes - then attribute is favourable.
    b. No - then need to consider trend – if improving (unfavourable recovering), if condition is stable (unfavourable no change) or getting worse (unfavourable declining) or if so bad attribute is not recognisable (destroyed).
3. If unfavourable identify likely causes for failure to meet target and the remedy and responsible party.
4. What are future prospects? Is the target likely to be continue to be met?
5. How can accuracy of assessment be improved?
6. Future monitoring requirements?
7. This process is completed for each attribute then aggregated up for the feature and site as a whole.

An example of a completed proforma for one of the SPAs accompanies this summary.

The results of the condition assessment of the SAC and 3 SPAs is summarised below. A table summarising the assessment also accompanies this report.

In order to assist the Advisory Groups and Management Groups in updating the Management Scheme at the end of the document there is a table identifying where action is required either due to an unfavourable assessment or lack of information has meant it has not been possible to make an assessment.

1. Gibraltar Point SPA

Summary

All of the international bird features are considered to be in favourable condition:

- Breeding Annex 1 birds: little tern
- Regularly occurring migratory birds: bar-tailed godwit, sanderling, grey plover
- SPA review additional features: knot and assemblage of > 20,000 waterfowl & seabirds

The key attribute 'population size' was assessed as favourable for the individual species bar-tailed godwit, sanderling, grey plover, knot, dark-bellied brent goose (all wintering or migratory), little tern (breeding) and 20,000 waterfowl assemblage.

1.1 Breeding Annex 1 birds

Numbers of **little tern** pairs have increased consistently since the SPA was designated. The number of breeding pairs in the 2003-07 period ranged from 43-52 with an average of 46 compared to the baseline period when the average number was 23 and lowest number of pairs nesting was as low as 16.

1.2 Regularly occurring migratory birds and assemblage of > 20,000 waterfowl & seabirds

The population target was set at 50% of the size of the baseline population with figures based upon 5-year peak means. For most of the named species, data was available for three 5-year periods since the baseline period and this allows population trends to be established with a high degree of confidence.

Bar-tailed godwit data show that passage numbers all exceed the baseline data (and populations for two of the 5-year periods are almost double the baseline) and although wintering numbers are not so high the population is at worst stable.

The assessment data for **dark-bellied brent goose** and **knot** show stable populations with figures around those of the baseline period for either the wintering or passage months.

Grey plover numbers exceeded the baseline figure for both the winter and passage months in all three 5-year periods showing a clear and consistent increase in population.

Sanderling numbers show a slight increase over baseline figures for the passage months but lower wintering numbers.

Other attributes such as 'extent of supporting habitat' and 'presence and abundance of prey' were not assessed due to lack of data. However, several of these attributes are derived from the Regulation 33 conservation objectives which have been updated by Common Standards Monitoring guidance such that the only mandatory attribute that could not be assessed is 'extent of supporting habitat'. It is hoped that an assessment of habitat extent can be made once a new survey (expected to report in January 2009) is available.

2. Wash SPA

Summary

The following features of The Wash SPA are currently in **favourable condition** in terms of population size and habitat extent:

- Breeding Annex 1 birds

The following features of The Wash SPA are currently in **favourable condition** in terms of population size only:

- Assemblage of >20,000 waterfowl & seabirds
- Non-breeding Annex 1 birds

The following feature of The Wash SPA is currently in **unfavourable declining condition** in terms of population size:

- Regularly occurring migratory birds. The reason for this assessment is because the population of one of the 13 sub-features does not achieve target levels due to a sustained population decline. The 12 other sub-features are favourable although one of these sub-features is close to failing. At the moment it is not clear if the unfavourable status of the single sub-feature (and the near unfavourable status of the other sub-feature) is directly linked with on-site conditions and/or management, or whether it is part of a wider population decline that influenced by factors outside the site. Further investigation is needed to elucidate the key factors influencing population size in order to fully establish if the condition of the whole feature is actually in unfavourable condition.

Habitat extent for the over-wintering bird features has not be assessed due to a lack of quantifiable data for all the inter-tidal habitats. The saltmarsh features are thought to be in favourable condition since there has been no overall loss since designation. However, the relationship between saltmarsh extent and the extent of the inter-tidal flats as over-wintering bird habitat is not fully understood or well defined. As a result, there are no established bird habitat baselines which means that it is not possible to fully qualify the current condition of the bird features of The Wash SPA, based on current condition assessment protocols.

2.1 Breeding Annex 1 birds – individual species exceeding nationally important population thresholds

Target: *The Wash SPA should be judged unfavourable if the breeding population of any mandatory sub-feature/species and its supporting habitats are not maintained at or above acceptable limits.*

These limits for population size are defined as the minimum breeding population recorded at all regular breeding sites within the SPA. For habitat extent it is defined as no loss of established habitat as determined at designation.

Mandatory features i.e. nationally important breeding Annex 1 birds listed in the SPA Citation

Common Tern - A total of 65 pairs was recorded in 2007 while the 5-year mean for 2002 - 2007 was 75 pairs. These population levels exceed the minimum of 59 pairs recorded in 1995 (for the period 1979 to 2007 when regular breeding has been recorded). Habitat extent has also been maintained. Current condition is assessed as **favourable** with an unstable population trend due to recent poor breeding success.

Little Tern - Erroneously included in citation and no regular breeding recorded since designation. Sporadic breeding has been recorded during 1985 to 1992 and 2005. Current condition has not been assessed.

The feature is considered to be in favourable condition if Little Tern is excluded.

Discretionary sub-features i.e. qualifying breeding Annex 1 birds recorded within the SPA since designation:
These are not formally sub-features of the SPA and as a result do not count towards the condition assessment of the SPA. The species are included in the summary for information only.

Mediterranean Gull is a recent colonist with no established baseline. Judged to be in **favourable** condition due to breeding population exceeding nationally important threshold since successful breeding was established in 2004.

2.2 Assemblage of >20,000 waterfowl & seabirds

Target: *The Wash SPA should be judged unfavourable if the baseline peak winter population of 203,829 waterfowl declines by 50% or more.*

Mandatory feature
The five-year peak winter waterfowl population for the period 2001/02 to 2005/06 was 318,314. This represents a 56% increase since designation. Current condition is assessed as **favourable** with a stable population trend.

Note: Condition assessments are based on population size only. Habitat extent is un-assessed due to lack of overall data.

2.3 Non-breeding Annex 1 birds – individual species exceeding nationally important population thresholds.

Target: *The Wash SPA should be judged unfavourable if population declines of 50% or more from the baseline level are recorded for any mandatory sub-feature/species.*

Mandatory features i.e. nationally important non-breeding Annex 1 birds listed in the SPA Citation

Bar-tailed Godwit is currently 77% above baseline (7,396) based on the five-year peak mean of 13,054 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a stable population trend.

Whooper Swan - The population counts for Whooper Swan cited in the SPA citation cannot be traced to any credible published source. Peak counts from the original WeBS count data do show, however, that Whooper Swan can reach nationally significant levels but these records include birds either flying over the site or settling briefly in or adjacent to it. Consequently, the inclusion of Whooper Swan as a sub-feature of this site must be regarded as erroneous.

Bewick's Swan - The population counts cited in the SPA citation cannot be traced to any credible published source. Peak counts from the original WeBS count data do show, however, that Bewick's Swan can reach nationally significant levels but these records include birds either flying over the site or settling briefly in or adjacent to it. Consequently, the inclusion of Bewick's Swan as a sub-feature of The Wash SPA should be regarded as erroneous.

The feature is considered to be in favourable condition if Whooper Swan and Bewick's Swan are excluded.

Note: Condition assessments are based on population size only. Habitat extent is un-assessed due to lack of overall data.

Discretionary sub-features i.e. qualifying non-breeding Annex 1 birds listed in the 1996 JNCC SPA Review and subsequent WeBS reports

These are not formally sub-features of the SPA and as a result do not count towards the condition assessment of the SPA. The species are included in the summary for information only.

Avocet is currently 32% above baseline (109 birds) based on the five-year peak mean of 144 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

Golden Plover is currently 214% above baseline (7,980 birds) based on the five-year peak mean of 25,082 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

2.4 Regularly occurring migratory birds – individual species exceeding internationally important population thresholds.

Target: *The Wash SPA should be judged unfavourable if peak winter population declines of 50% or more from the baseline level are recorded for any mandatory sub-feature.*

Mandatory features i.e. internationally important non-breeding waterbirds listed in the SPA citation:

Pink-footed Goose is currently 496% above baseline (5300 birds) based on the five-year peak mean of 31,598 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

Dark-bellied Brent Goose is currently 42% above baseline (14,713 birds) based on the five-year peak mean of 20,851 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a slightly negative population trend due to recent national population decline.

Shelduck is currently 58% below baseline (17,043 birds) based on the five-year peak mean of 7,166 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **unfavourable declining** with a negative population trend.

Pintail is currently 33% below baseline (1,497) based on the five-year peak mean of 1,007 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a recovering population trend.

Oystercatcher is currently 27% below baseline (19,602) based on the five-year peak mean of 14,341 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a recovering population trend.

Grey Plover is currently 16% below baseline (7,396) based on the five-year peak mean of 6,182 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a slightly negative population trend due to recent national population decline.

Knot is currently 40% above baseline (67,839) based on the five-year peak mean of 94,959 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a recovering population trend.

Dunlin is currently 7% below baseline (33,791) based on the five-year peak mean of 31,415 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a slightly negative population trend due to recent national population decline.

Bar-tailed Godwit is currently 77% above baseline (7,396) based on the five-year peak mean of 13,054 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a stable population trend.

Curlew is currently 13% above baseline (3,072) based on the five-year peak mean of 3,482 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

Redshank is currently 13% below baseline (3,715) based on the five-year peak mean of 3,244 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

Turnstone is currently 49% below baseline (899) based on the five-year peak mean of 455 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a negative population trend.

Sanderling is currently 72% above baseline (300 birds) on the five-year peak mean of 515 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a slightly negative population trend due to recent national population decline.

The feature is considered to be in unfavourable declining condition because of the current status of the Shelduck overwintering population.

Note: All condition assessments are based on population size only. Habitat extent is un-assessed due to lack of overall data).

Discretionary sub-features i.e. qualifying non-breeding waterbirds listed in the 1996 JNCC SPA Review and subsequent WeBS reports:
These are not formally sub-features of the SPA and as a result do not count towards the condition assessment of the SPA. The species are included in the summary for information only.

Ringed Plover is currently 129% above baseline (passage 1,431 birds) based on the five-year peak mean of 2,738 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a negative population trend due to recent national population decline.

Ringed Plover is currently 0.3% above baseline (winter 256 birds) based on the five-year peak mean of 257 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a negative population trend due to recent national population decline.

Golden Plover is currently 214% above baseline (7,980 birds) based on the five-year peak mean of 25,082 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

Lapwing is currently 31% above baseline (28,297 birds) based on the five-year peak mean of 37,087 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

Black-tailed Godwit is currently 391% above baseline (853 birds) based on the five-year peak mean of 4,186 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a positive population trend.

Sanderling is currently 129% above baseline (passage 1,195 birds) based on the five-year peak mean of 2,738 birds (original count data) recorded during 02/03 to 06/07. Current condition is assessed as **favourable** with a slightly negative population trend due to recent national population decline.

3. North Norfolk SPA

Summary

Interest features:

- Breeding Annex 1 birds
- Regularly occurring migratory birds
- Assemblage of >20,000 waterfowl & seabirds

North Norfolk SPA is **favourable** for wintering bird species and assemblage**, unfavourable** for breeding little tern and ringed plover, so unfavourable overall. There are other species showing definite downward trends and these need to be flagged up, even though they are still within limits and so not affecting unfavourable condition judgement. With the exception of brent geese, **wintering bird figures indicate great success** over the last 10 years.

3.1 Annex 1 breeding birds

Note, all assessments based on population size. Feature considered unfavourable if there has been a 25% **decrease** or greater from baseline. Habitat extent is almost entirely 'unassessed'.

Avocet: Average 238 pairs 00-04. 85% increase since designation 34% increase since SPA review. **Favourable.**

Bittern: Average 1.6-1.8 booming birds 00-04 (although an increase from 0 to 3 between 02-04). 50% decline since designation, 2004 figure is the same as at SPA review. Decline post-1995 after relatively stable population 81-95 (4-6 boomers). Difficult to see particular trends here. Numbers down on designation but recovering now. **Unfavourable recovering.**

Common Tern: Average 464 pairs 00-04. numbers relatively stable 00-04, but longer term decline from 1976 (population of 2000+pairs for 30 years prior), 1989 designation and 98 SPA review. 85-89 average of 535 pairs. **Unfavourable no change?**

Little Tern: Average 295 pairs 00-04. This is a 23% decline since SPA review and 25% since designation. Record low numbers in 2004 with further decline in 2005. **Unfavourable declining.**

Marsh Harrier: Average 20 nesting females 00-04 with an increase throughout this period (27 in 2004). Average is a 400% increase since designation and approx 50% increase since SAP review. **Favourable.**

Sandwich Tern: Average 4047 pairs 00-04. Population still within acceptable limits and fluctuation although noticeable downward trend post 2003. considered **favourable** as still within limits although recent downward trend needs to be watched carefully.

Redshank: 2005 survey revealed 885 pairs for all SPA. This is a 26% increase on SPA review. **Favourable**

Ringed Plover: 156 pairs in 2004, 172 in 2002. This represents a sustained decline of 29% since 1998, 47% since 1993 and 65% since 1984. Considered to be **unfavourable declining.** Reasons for declines are unspecific, but may be attributable to a combination of disturbance, predation and weather. More work needed on this.

3.2 Regularly occurring migratory birds and assemblage of >20,000 waterfowl & seabirds:

Feature considered unfavourable if there has been a 50% **decrease** or greater from baseline

Waterbird assemblage: 5 year peak mean 00-04 is 217,166 birds. Represents a 403% increase since designation and 138% since SPA review. It should be noted that the bulk of the increase is down to much greater numbers of pink-footed geese. **Favourable**

Avocet: 5 year peak mean 00-04 is 348 birds. A 127% increase since SPA review. **Favourable**

Golden Plover: 5 year peak mean 00-04 3741 birds. An increase of 40% since SPA review. **Favourable**

Hen Harrier: 5 year peak mean 00-04 14 birds. Slightly lower than period 97-03 but still within limits, no discernable trend. **Favourable**

Ruff: 5 year peak mean 00-04 is 113 birds. A 109% increase since SPA review **Favourable**

Ringed Plover: 5 year peak mean 00-04 is 1957 birds. A 56% increase since SPA review. **Favourable,** although considered to be as much a product of improved counting as an actual increase in numbers.

Brent Goose: 5 year peak mean 00-04 of 9231 birds. A 20% decrease on SPA review. Recent data: max winter count 03-04 was 5722, a 50% decrease on 99-00, possibly as a result of poor breeding. **Favourable** as per limit thresholds but significant **cause for concern** at downward trend. Could be considered **unfavourable declining** based on 00 and 04 data alone.

Knot: 5 year peak mean 00-04 13591 birds. A 119% increase since designation and 22% since SPA review. May be due to larger numbers of Wash birds roosting at Holme on higher tides **Favourable**

Pink-footed Goose: 5 year peak mean 00-04 72106. A 1102% increase since designation and 203% since SPA review. Spectacularly **Favourable.**

Teal: 5 year peak 00-04 4655. A 56% increase since SPA review. **Favourable**

Wigeon: 5 year peak mean 00-04. A 279% increase since designation and 35% since SPA review. **Favourable**

4. The Wash & North Norfolk SAC

Summary of overall SAC assessment	
Samphire & other annuals	**Not assessed**
Atlantic salt meadows	**Not assessed**
Mediterranean saltmarsh scrub	**Not assessed**
Saline lagoons	**Not assessed**
Intertidal mudflats and sandflats	**Unfavourable declining**
Subtidal sandbanks	**Not assessed**
Reef	**Favourable**
Large Shallow Inlet & Bay	**Not assessed**
Common seal	**Unfavourable declining**
Otter	**Not assessed**
Overall SAC assessment	**Unfavourable declining overall**

4.1 Saltmarsh features

Summary

There are 3 saltmarsh interest features:

- Samphire & other annuals colonising sand & mud
- Atlantic salt meadows
- Mediterranean saltmarsh scrub

It has not been possible to assess the features against the CSM standards due to a lack of information since baselines were set. For many attributes these baselines have been set only recently, for example in North Norfolk and The Wash the baseline was at least partially based upon on surveys undertaken in 2001-2002, and there hasn't been the opportunity to re-survey. Gibraltar Point is being surveyed at the moment and results will be available shortly. As such this feature is **not assessed** across the site.

A non-CSM assessment (not scientifically based) suggests **extent** of saltmarsh features in both **North Norfolk** and **The Wash** are probably favourable with no significant losses and gains through accretion at least balancing losses through erosion.

However there are concerns at Seacroft Marsh at **Gibraltar Point**, where erosion of the sand dune has allowed access to the Atlantic salt meadows behind. This is likely to affect the **creeks and pans attribute** due to changes in patterns of drainage and potentially lead to loss of the **upper saltmarsh** which is a rare sub-feature only occurring in this part of the site. Discussions are in progress with the Environment

4.1.1 Gibraltar Point saltmarsh features

No monitoring has been undertaken since the baseline NVC survey of 1998/99 and so it has not been possible to assess any of the three habitats: *Salicornia* & annuals colonising sand/mud, Atlantic salt meadows or Mediterranean & thermo-Atlantic halophilous shrubs. An NVC survey is in progress at present to address this information shortfall. However, in the meantime it has been possible to indicate trends (Future Prospects).

There is no reason to suspect that the Salicornia and thermo-Atlantic halophilous shrubs communities have changed in either extent or character in the 10 years since the baseline data was gathered. The coastal processes required for the maintenance of these communities appear to be fully functional, there have not been any adverse events recorded (the site has full time wardening staff for the National Nature Reserve, NNR) such as pollution and visits by Natural England staff during this period have confirmed that characteristic species are still present and well distributed.

Future prospects for Atlantic salt meadow are less positive. For most of the site, there is nothing to suggest that natural processes are being disrupted but in the north there are concerns. There has been on-going localised erosion of the dune ridge fronting the saltmarsh north of the NNR in an area known as Seacroft Marsh. The erosion appears to be the result of sea defences located outside the SAC boundary at the southern end of Skegness beach. The Environment Agency have modelled the extent of predicted erosion and it is likely that the area concerned will continue to increase. The effect of the erosion has been to remove sections of the barrier dunes allowing high spring tides access to the saltmarsh behind. When Seacroft Marsh is assessed it is likely to fail the Physical Structure

attribute for 'creeks and pans' as new patterns of drainage have established themselves over the past few years as a result of the dune breach. The Extent attribute may also be effected but it is not yet clear whether the degree of erosion has had a significant impact on the extent of this community.

In the longer term the Vegetation Structure attribute (zonation/range of NVC communities) may be effected as Seacroft Marsh is the only part of the site supporting SM16 *Festuca rubra* saltmarsh communities. If the new drainage patterns become irreversibly established then these upper saltmarsh swards may well revert to mid saltmarsh communities with a loss of extent, potentially in total, of this community.

Discussions have already been started with the Environment Agency and the landowners, East Lindsey District Council, to find a solution.

4.1.2 The Wash saltmarsh features

All communities currently **unassessed** for all attributes, with the possible exception of the **extent attribute,** which is probably in **favourable** condition due to overall gains through local accretion and no significant overall losses due to erosion and reclamation. The requirement for new information is recognised and includes **NVC survey of all three saltmarsh features for whole site, analysis of 2008 EA aerial photographs** and **analysis of LIDAR data**.

4.1.3 North Norfolk saltmarsh features

All communities currently **un-assessed** for all attributes, with the possible exception of **extent,** which might be assessed as **favourable**, but this is only through a visual comparison of aerial photos from 1988, and the current Google Earth (photos from 2005)? These show no significant loss and some local accretion and erosion, but its still not a particularly sound scientific basis.

Reason for mostly un-assessed status is the need for new data for an assessment to be made. This includes: **NVC survey to replace 2003 survey**. **Analysis of new 2008 EA aerial photos**, and **analysis of north Norfolk LIDAR data**. These sources have been identified but not gathered during this exercise.

4.2 Lagoon (Snettisham lagoons)

Summary

The baseline for lagoon attributes has only been set recently (in November 2005) within the last reporting period and a repeat survey of all the attributes has not been undertaken as yet. Consequently this feature is **not assessed**.

However, we do have concerns about **new unregulated** development associated with the chalets (eg jetties, new chalets) on the shingle ridge barrier to the lagoons which may affect the **extent** and **isolating barrier** attributes. There are also concerns over water quality in the lagoons due to the prevalence of summer algal blooms and a perceived decline in the abundance of specialist lagoonal species which may impact the **biotope composition**, **distribution of biotopes**, and **presence or abundance of specified species attributes.** A survey is currently in progress to investigate the water quality and hydrology of the lagoons to address these concerns.

Extent and **isolating barrier (presence and nature)** (both CSM mandatory) and extent of water (CSM discretionary) **not assessed**. However, we do have concerns over the northerly lagoon at Snettisham which is bordered by chalets on the seaward side on the shingle ridge. Most of these chalets have been present for some time and are not the source of this concern. The concern relates to **new unregulated development** of the chalets and associated development eg jetties, quays etc. This has the potential to impact upon the extent of the lagoons. New development should be captured by the planning system (King's Lynn & West Norfolk Borough Council).

The area has also been identified as an area where Mean High Water mark springs is retreating although at a low level. It will be important to consider this in development of Shoreline Management Plan 2 to assess the implications of this movement on the shingle barrier and lagoon behind it and develop an appropriate response.

Biotope composition (CSM mandatory), **Distribution of biotopes** (CSM discretionary), **Species population measures – presence or abundance of specified species** (CSM discretionary)). No data since baseline so **not assessed**. However concern from baseline studies over the past 10 years or so is that there appears to have been a decline in the water quality of the lagoons and a perceived decline in the abundance/presence of scheduled and specialist lagoonal species, both flora and fauna. Blue-green and green algal blooms have become prevalent throughout the latter months of the summer (August to September) to such a density that the water resembles 'pea soup' (RSPB reserve manager). This led to the saline lagoons being recorded as unfavourable declining due to poor water quality in the past condition assessment (non CSM). Two potential causes have been identified for the decline in the condition of the lagoons: i) septic tank / soakaway seepage from properties located on the periphery of one of the pits and/or ii) increased numbers of waterbirds using the lagoons and their associated faecal input into the system. A study has been let this autumn to confirm whether or not the lagoons are experiencing water quality problems and if so identify the source of the problem and help understand what impact it is having on the conservation interest of the lagoons.

Salinity regime (CSM Mandatory). No data since baseline (only set in Nov 2005), **not assessed**. However no changes to structure of shingle bank or sluice separating the pits or abstractions or discharges occurring which would affect salinity.

4.3 Intertidal mudflats and sandflats

Summary

There is an apparent lack of information on the **extent** attribute of this feature across the site. A number of other attributes – and all of those in **North Norfolk and Gibraltar Point** - have either not had a baseline set or not been re-surveyed since baselines were set. A priority for the next reporting round is to set these baselines and re-survey attributes.

However information is available for several of the intertidal flats attributes in **The Wash** and there have been some **notable successes**. In particular the **distribution of mussel and cockle beds** are **favourable**, the **extent of mussel and cockle beds** is **unfavourable recovering** and the attribute to **maintain abundance of mussel** is **favourable**. This is a very significant achievement given the very poor state of mussel and cockle stocks and the populations of shellfish-eating birds that depend upon them that persisted throughout the 1990s. It reflects the significant progress made by the fishing industry, ESFJC and Natural England in developing sustainable management measures which resulted in the agreement of the Shellfish Policies earlier this year.

Unfortunately the attribute to **maintain abundance of cockle** has been assessed as **unfavourable declining** due to the significant loss of stock from le Strange Estate. Given the relative contribution of these stocks to The Wash and therefore site as a whole this means the feature is assessed as **unfavourable declining overall**.

Although not yet assessed under Common Standards Monitoring guidance, we have concerns that in certain areas of the site loss of intertidal flat **extent** and unfavourable changes to **topography** may be occurring, due to accretion of saltmarsh over the intertidal flats and erosion of the flats. This is particularly the case in the western side of The Wash where reclamation has occurred in the past. We are concerned that sea level rise will exacerbate these processes and lead to coastal squeeze. We consider this is likely to be a **significant issue for site integrity**. These issues should be addressed through the second Shoreline Management Plan which will provide further information to enable impacts on the intertidal flat feature to be assessed and a process to put in place appropriate management through dialogue with the Environment Agency, local authorities, landowners and communities.

Although we don't have a baseline on the **negative indicator species Pacific oyster** it is present in the site and we consider careful attention should be paid to its distribution and abundance. Experience from the Wadden Sea, France and most recently Brightlingsea in Essex have shown that it can increase its population rapidly and smother intertidal habitats, including mussel beds as has occurred in the Wadden Sea. Nationally work is being undertaken with SeaFish and the Shellfish Association of Great Britain to develop a protocol for it's management.

4.3.1 The Wash intertidal flats

Extent (CSM Mandatory). Target is that there should be no decrease in extent of littoral sediment. **Topography** (CSM discretionary). Target is no change in topography of the littoral sediment, allowing for natural responses to hydrodynamic regime.

Although aerial photos (from EA shoreline monitoring program) and a satellite image (undertaken by CEH) are available, there doesn't appear to be data on total extent (ie at low

tide springs when fullest extent of intertidal is exposed) that can be used to set a baseline for extent. This needs clarifying with the EA & CEH (by comparing times of survey with tide data).

However, information is currently available on the position of the saltmarsh-mudflat boundary, mean high & low water, and shore profile (eg vertical and horizontal trends in saltmarsh and mudflat development) from saltmarsh surveys and Environment Agency monitoring programmes. These suggest erosion of intertidal flats is occurring in certain areas of the Wash which would affect these attributes. The Wash is still recovering from effects of land claim which is impacting extent of intertidal flats in several locations, particularly the coast between the Witham and Gibraltar Point. In these areas saltmarsh is accreting laterally seaward and there is a fixed low water mark resulting in decreased intertidal mudflat (see Pethick 2002). In the Freiston to Leverton area, research indicates it is necessary to maintain a minimum width of intertidal flat to dissipate wave energy and avoid erosion. Erosion at Freiston is thought to be due to the intertidal flat being too narrow (<3.5km width) (Univ. of Newcastle 1998). The realignment scheme at Freiston has sought to address this. The relationship between offshore intertidal banks and intertidal flats also needs to be considered. There is seaward movement of the low water mark of the foreshore between Rivers Welland and Nene which may be due to landward advance of eroding offshore banks (Posford Duvivier 1997). Further information is coming available through the second Wash Shoreline Management Plan. We have recently had sight of this and need to consider it further in discussion with the EA before we can fully assess these attributes. Consequently they are **not assessed** at present.

In relation to future prospects if defences remain as they are, over time sea level rise will outpace saltmarsh and mudflat accretion and exacerbate the responses described above and coastal squeeze will occur. Again this is likely to particularly affect the western side of The Wash. The second Wash Shoreline Management Plan which is currently being developed provides a means of putting in place appropriate management - through discussion with the EA, local authorities, landowners and local communities - to address climate change impacts upon the interest features of the site.

Sediment character (CSM Mandatory). Target is to maintain spatial distribution of sediment types across site. Bell & Walker 2007 compared particle size analysis (PSA) sediment data collected from CEH transects surveyed in 1986, 1998 and 1999 with ESFJC qualitative sediment data (collected by visual assessment) from a survey in 2005. Found that similarity in sediment characteristics by area between each of these surveys is high – ie spatial distribution of sediments appears quite stable over time. ESFJC results accord closely with CEH data. It is noticeable from ESFJC data that the west Breast Sand which was characterised as predominantly mud in CEH's 1999 survey is recorded as sand or muddy sand in ESFJC's 2005 survey but this is consistent with the characteristics of this area in CEH's 1998 and 1986 surveys, suggesting a return to the 'norm'. Should also be noted that ESFJC's 2005 survey did not cover the intertidal flats east of the Ouse. Conclude this attribute is **favourable** (for those areas surveyed by ESFJC in 2005).

Biotope composition (CSM Mandatory), **Distribution of biotopes** (CSM Mandatory). **Not assessed** (no data since baseline) – except for distribution of mussel and cockle biotopes – see below.

Distribution of mussel biotope. Target is that site should support established mussel beds on the Gat (West & East), Mare Tail (North and South) and Hunstanton and should support at least 15 beds in total spread across the range of areas and shore heights in the inner Wash (Witham to Ouse). Based on autumn 2007 data established beds are all present and there are a total of 18 beds. Conclude this attribute is **favourable**.

Distribution of cockle biotope. Target is that subject to natural change at least one cockle bed should be present on the inshore and offshore banks in each of the following sectors of The Wash: Wainfleet – Freiston, Witham – Nene, Nene to the Ouse and Eastern Wash. ESFJC cockle survey data for The Wash Fishery Order area and data for le Strange show cockle beds are present in each of these areas. Conclude this attribute is **favourable**.

Species composition of representative or notable biotopes - Macoma Arenicola dominated biotopes (CSM discretionary). No baseline. **Not assessed**.

Extent of mussel biotope (discretionary). Target is that mussel bed area should not fall below 500ha. Latest extent information available to us (2006) shows extent is some way below this at 421ha. However, it is important to note that it was only at the start of this reporting round – in 2001 – that the first good spatfall occurred following the 1990s stock crash and subsequent prolonged period of poor recruitment and it was during this round that sustainable management measures were progressively developed. In the last 5 years or so area has been steadily increasing from 318.21ha in 2002 to 426.9ha in 2005, declining slightly in 2006. It is markedly higher than the lowest stock level reached in 1992 when The Wash supported only 155ha of mussel. We consider that the signed off Shellfish Policies will enable this recovery to continue and conclude that this attribute is **unfavourable recovering**.

Extent of cockle biotope (discretionary). Target is that subject to natural change, area of bed containing cockles that have survived their first winter should not fall below 3000ha (mean area over reporting cycle). Mean area over the period 2001-2006 is 3531ha. Conclude this attribute is **favourable**.

Species population measures – maintain age / size class structure and abundance of mussel (CSM discretionary). Target for mussel is that **total** stock should exceed 12,000t of which 7,000t must be mussel **>/= 45mm** (mean over 6 year reporting cycle). Over the 6 year period 2001-2006 the mean of the **total** stock is 10,359t and the mean of mussel **>/=45mm** is 5520.5t. However, it is important to note that it was only at the start of this reporting round – in 2001 – that the first good spatfall occurred following the 1990s stock crash and subsequent prolonged period of poor recruitment and it was during this round that sustainable management measures were progressively developed. Since the 2001 spatfall, but for a temporary decrease in 2003, total mussel stocks have been increasing steadily each year and been at or above 12,000t since 2004. Stocks >/= 45mm have also increased steadily from 4,283t in 2002 to approximately 7,000t since 2004. We consider that the signed off Shellfish Policies will enable this recovery to continue and conclude that this attribute is **unfavourable recovering**.

Species population measures – maintain age / size class structure and abundance of cockle (CSM discretionary). Target for cockle is that subject to natural change, stocks that have survived their first winter should be no lower than 11,000t in The Wash (ie Wash Fishery Order fishery and le Strange Estate)(mean over reporting period). The mean stock level in The Wash Fishery Order over the period 2001-2006 is 13564t and so we conclude that this attribute is favourable for this area of The Wash. However, there has been a very substantial loss of cockle (far higher than 33%) from le Strange last summer due to fishing activities. Given that this area can form a significant proportion of the total Wash stock (20-50%) we consider that this attribute is **unfavourable declining** overall. We are seeking to work with the fishery tenant to introduce sustainable fishery management measures on the Estate beds to address unsustainable fishing activities.

Species population measures – maintain age / size class structure and abundance of mussel and cockle (CSM discretionary). To support the SPA interest the total stock of mussel (>/= 20mm length) and cockle (>/= 15mm length) should not fall below 40kg AFDM

(dry mass) per bird at the start of winter. Based on supporting 24,000 oystercatcher this means 960Kg AFDM is required. The mean stock levels of mussel and cockle from (The Wash Fishery Order) area in these size classes over the period 2001-2006 amount to 600.822t and 406.92t AFDM respectively and 1007.742 in total. We conclude this attribute is **favourable**.

Species population measures – no increase in presence or abundance of named negative indicator species – Pacific oyster, *Crassostrea gigas;* Amercian razor shell, *Ensis directus*; American slipper limpet, *Crepidula fornicata* (CSM discretionary).

Pacific oyster: No baseline. **Not assessed**. No data except anecdotal information that they are present on mussel beds, particularly the Gat, as scattered individuals. Pacific oysters have been shown to be very invasive, with rapid population increase over short time periods and out-competing native communities. This has been clearly demonstrated In the Wadden Sea where, after a warm spring / summer in 2003, there was a massive settlement of oyster. Development of extensive oyster reefs has also occurred in France and is now occurring in the UK – most recently at Brightlingsea in Essex. CEFAS sea temperatures indicate that the waters around the Thames are currently warmer than surrounding areas but with rising sea temperatures the potential for large settlements of Pacifics in this European marine site is becoming a realistic probability. In view of this, in relation to future prospects we consider there is a medium – high risk that this attribute could become unfavourable. In relation to a remedy, at a national level there is on-going work with SeaFish, Shellfish Association of Great Britain (SAGB) etc on developing a Pacific Oyster Protocol. Also at a national level, Natural England are contributing funding for an oyster processing feasibility study as a means of removing wild settlements of Pacific oysters.

American razor shell and slipper limpet – see subtidal sandbanks.

4.3.2.Gibraltar Point & North Norfolk intertidal flats

Have not been assessed due to lack of data / lack of data since baseline.

4.4 Subtidal sandbanks

Summary

There is a lack of information on the **extent** attribute of this feature across the site. A number of other attributes – and all of those in **North Norfolk and Gibraltar Point** - have either not had a baseline set or not been re-surveyed since baselines were set. As such the feature is **not assessed** overall.

In **The Wash** the **sediment characteristics**, **distribution of biotopes** and **extent of sub-feature** attributes are currently considered **favourable** but there are suggestions of a significant change in sediment type in the north-western and south-eastern sides of the site that requires further investigation.

We have assessed the **abundance of negative indicator species non-native American razor shell (*E. directus*)** attribute as **favourable** since evidence of competition for food with native shellfish populations doesn't seem to be present at the moment. However we consider monitoring of shellfish productivity would be useful to

4.4.1 The Wash

Extent (CSM Mandatory). Target is that there should be no decrease in extent of inshore sublittoral sediment habitat. No baseline. **Not assessed**.

Topography (CSM discretionary). Target is no change in topography of the inshore sublittoral sediment habitat, allowing for natural responses to hydrodynamic regime. No data since baseline. **Not assessed**. ESFJC Acoustic Ground Discrimination Surveys (AGDS) may be able to provide topographic information?

Sediment character (CSM mandatory). No change in composition of sediment types across the feature allowing for natural succession / known cyclical change. Broadscale Mapping Project (BMP, Foster-Smith & Sotheran, 1999) found in their surveys of The Wash, Lincolnshire and North Norfolk coasts between 1996 and 1998 that the various sediment types were patchily distributed with very different types lying close to each other and that this was especially the case for The Wash (see 7.2.1 and fig 7.2). Comparison of the 2002 Natural England – Environment Agency Wash grid survey (Bailey, Coad & Bamber, 2005) with previous EA Wash grid surveys (1991, 1993 and 1999) also indicates that at most sites there is some change between years.

However, there do seem to be broad trends – the deep central area of Wash (ie Lynn Deep / the Well) seems characterised by mixed sediments or coarse sand/gravel, inner offshore banks are typically fine sand (off The Gat, Seal Sand, Styleman's), there are typically muddy sands at the mouths of The Ouse and Witham/Welland and areas of fine/medium to fine sand in the middle of the Boston Deeps and off Heacham.

(NB the BMP surveys, which used AGDS and video in addition to grabs, found that the entrance to The Wash has boulder, cobble, gravel and gravel-sand mixtures. This area probably falls within the two sub-features of the Large Shallow Inlet & Bay feature: subtidal boulder and cobble and mixed sediment communities but to provide a complete picture of the Wash subtidal it is worth mentioning them here. Bailey et al, 2005 sampled using grab only, but the mixed sediments and gravels they found in this area would be consistent with the BMP results).

These trends are also seen in the 2002 data. However, the biotope data suggests a significant change in sediment type in the north-western (of Long Sand and Roger) and south-eastern (Stubborn and Sunk Sands) parts of The Wash with loss of fine sediments resulting in coarser sands – this requires further investigation. Further detail is provided under the distribution of biotopes attribute below. Data is fairly broad scale & interpreted qualitatively (visual assessment of fig 1.3 of 2005 report) but at this stage conclude that this attribute is **favourable** overall but this may need to be updated after further investigation of changes in north-western and south-eastern Wash.

Distribution of Biotopes (CSM mandatory). Target is to maintain distribution of biotopes in each sub-feature (gravel and sand communities and muddy sand communities). **Extent of subfeature** (CSM discretionary). No change in extent of inshore sublittoral biotopes or sub-features (gravel and sand communities and muddy sand communities) allowing for natural succession or known cyclical change.

The biotopes / community descriptions listed in the conservation objective are based upon the BMP surveys (see Appendix 3, Foster-Smith & Sotheran, 1999) and use an older version of the biotope classification than that used to identify the biotopes in the other baseline surveys – the EA Wash grid surveys of 1991, 1993, and 1999 – and the Natural England - EA 2002 survey which we are using to make the condition assessment (see Bailey, Coad & Bamber, 2005). The BMP surveys also collected data on epifauna using video and trawls /

dredges whereas the EA Wash Grid surveys only sampled infauna using a day grab. However, based upon the characterising species, the infaunal community types identified by BMP do seem broadly consistent with the biotopes produced from the EA surveys and the distribution of these biotopes is similar:

- bivalve *Abra alba* characterised community in inner central area of Wash
- ross worm *Sabellaria spinulosa* and sandmason worm *Lanice conchilega* in outer central area
- sparse polychaetes in the Boston Deeps
- catworm *Nephtys* and amphipod *Bathyporeia* in The Boston Deeps (the eastern side of The Wash wasn't surveyed by BMP but the EA surveys identified this as the main biotope in this area)

There are a few exceptions:

- The BMP survey identified a community type characterised by the peacock worm *Sabella pavonina* in the Boston Deeps. The EA surveys didn't produce any *Sabella* biotope. However, examination of the species lists produced for each sample point indicates it was a key species at a number of sites identified as either the "bivalves *Abra alba* and *Nucula nitridosa* in muddy sand" biotope (SS.SSA.CMuSa.AalbNuc) or "catworm *Nephtys hombergii* and Baltic tellin *Macoma balthica* in sandy mud" biotope (SS.SMu.IsaMu.NhomMac) (Appendix 3 and 4 of Bailey, Coad & Bamber, 2005). These sites were all (across all years) in the central area of The Wash rather than the Boston Deeps (sample stations W31, 33, 38, 48, Fig 1.1, Bailey, Coad & Bamber, 2005).
- The BMP survey identified a biotope characterised by another species of *Sabella*, *S. discifera*, at one sample site at the entrance to the Boston Deeps, although the authors also note it commonly occurred in ross worm *Sabellaria spinulosa* biotopes. This species wasn't collected in any of the EA surveys.
- Based on epifaunal sampling, the BMP surveys identified two community types characterised by dense brittlestar beds of *Ophuira albida* (with *O. ophiura* on muddy sand) or *O. ophuira* (with *O. albida* on silty sandy shell ground). As in the case of the peacock worm community, the EA surveys didn't identify a brittlestar biotope in it's own right but they were key species at a number of sites identified in most cases as either the *A. alba* / *N. nitridosa* biotope or the *N. hombergii* / *M. balthica* biotope. It is perhaps not surprising that the EA work did not identify a brittlestar biotope since the authors of the BMP report noted that the species composition of their *O. albida* community type was similar to the *A. alba* biotope but wanted to separate it from that biotope due to the conservation interest of these species (Foster-Smith & Sotheran, 1999). The BMP work identified the brittlestar communities occurring at a sample station in the central Wash, a station in the southern end of the Boston Deeps and a number of stations in the inner Wash adjacent to Hook Hill and Main End. The EA sites with significant numbers of brittlestar were all (across all years) within the central area of The Wash adjacent to Ferrier / Sunk Sand (sample stations W33, 39, 46, 54, 61).
- The BMP work identified a community characterised by the bristleworms *Scoloplos armiger* and *Spiophanes bombyx* with diverse associated fauna which occurred mainly in the Boston Deeps and also in areas of the central Wash. They noted that both species are commonly found in other biotopes notably *Nephtys* / *bathyporeia* and *Sabellaria* / *Lanice*. However, the EA survey identified these species at a number of sites identified in most cases as again, either the *A. alba* / *N. nitridosa* biotope or the *N. hombergii* / *M. balthica* biotope. These sites were present across all years in the south-east of the inner Wash.

Analysis of data from the EA surveys to produce biotopes based upon the current Marine Habitat Classification identifies 5 main biotopes, which as referred to above are similar to the BMP community types / biotopes (reef is not considered further here as it is an interest feature in it's own right). These are:

- sandy mud with catworm *Nephtys hombergii* and Baltic tellin *Macoma balthica* (SS.SMU.ISaMu.NhomMac)
- muddy sand with bivalves *Abra alba* and *Nucula nitridosa* (SS.SSA.CMuSa.AalbNuc)
- muddy sand with tube worms *Spio* spp. (SS.SSA.CMuSa.Spio)
- fine sand with the catworm *Nephtys cirrosa* and amphipod *Bathyporeia* spp. (SS.SSA.IFiSa.NcirBat)
- coarse sand with stonemason worm *Lanice conchilega* (SS.SCS.ICS.Slan), and
- 'impoverished' areas not assigned to any particular biotope.

In 1991 The Wash was dominated by the muddy sand biotope with *A. alba* and *N. nitrosa* which ran through the centre of The Wash, covering an estimated 133.4km^2, and also the fine sand biotope with *N. cirrosa* and *Bathyporeia* which ran along each side, covering an estimated 198.4km^2. The sandmason worm *S. lanice* biotope occurred in a patch off Roger Sand (7.2km^2) and there were impoverished patches in the North East and South East of the site. Comparison of the distribution of these biotopes in 2002 with this baseline survey indicates a significant proportion of the central channel – particularly towards the mouth of The Wash, off Sunk Sand and Long Sand - has changed from the muddy sand *A. alba* / *N. nitrosa* biotope (decreased to 47.8km^2) to coarse sand biotopes characterised mainly by *L. conchilega* (increased to 98.1km^2) but also *Protordorvillea kefersteini* and other polychaetes (SS.SCS.CCS.Pkef) (17km^2). However, visual assessment of the sediment distribution data doesn't appear to reflect a significant change in sediment type, the sediment data (fig 1.3) shows the sites towards the mouth of The Wash have consistently supported the sandier sediment types. There has been a shift from mixed sediment to coarse sand/gravel but elsewhere where this biotope change has occurred there has either been no change in sediment or a change from medium sand to mixed sediment or mixed sediment to muddy sand – arguably all of these are changes between similar sediment types (& the latter example is contrary to the biotope change). The other biotopes have maintained roughly the same spatial distribution and extent (see Table 2.1), although the muddy sand with tube worms *Spio* spp. biotope off Holbeach was newly identified in 2002 – in 1991 this area had been classified as a mixture of biotopes.

Bailey, Coad & Bamber (2005) also developed their own 'Wash' biotope classification which they considered represented a better fit with the faunal groups they found in The Wash. They identified a number of Wash biotopes including:

- A deep central channel of The Wash with mixed sediments supporting diverse communities
- mixed sediments dominated by the tubeworms *Spiophanes bombyx* and *Spio* spp. and bristle worms *Nephtys cirrosa* and *N. hombergii*.
- Fine sands dominated by *N.cirrosa* and *S. bombyx*.

Comparison of the distribution of these Wash biotopes between 1991 and 2002 indicated that the diverse central Wash biotope was still present in 2002 but had reduced in area (by approx 10% from 142km^2 to 126.1km^2).

However, elsewhere there was a large change - the mixed sediment tubeworm / bristleworm biotope appeared to have been replaced (reduced from 222.3km^2 to 0km^2) by the fine sand *N. cirrosa* / *S. bombyx* biotope (increased from 15.8km^2 to 274.2km^2). Statistical analysis of the species data also supported this finding. There was a significant change in sites along the northwestern (either side of Long Sand and Roger) and southeastern (off Stubborn and Sunk Sands) sides of The Wash which is attributed to a change in sediment granulometry loss of the silt-clay fraction leading to coarsening of sediment and therefore a faunistic change to species more adapted to 'cleaner' sands. However, interpretation is difficult as some of the species that have declined may be those that prefer clean sand (eg *Spio martinensis* & *S. decorata*).

In conclusion, we note that all community types / biotopes identified in the baseline survey are still present (albeit recorded under different biotope codes). We also note the patchiness of the sediment distribution and the importance this has on the fauna it can support. We note that where changes have occurred they are generally to similar biotopes. Consequently we consider that these attributes are both **favourable** but:

- **Consider further investigation is required of the changes in 'Wash' biotopes (as identified by Bailey et al, 2005), including closer analysis of the sediment data, to assess whether this change reflects a real change in sediment type.**
- **We also consider it important that in future monitoring, the data analysis and reporting should seek to draw out local distinctive / diverse communities (eg peacock worm and brittlestar beds, *Scoloplos armiger* and *Spiophanes bombyx* communities as identified in the BMP surveys) as the biotope classifications may hide these communities in characterising The Wash within a few broad biotopes. It is also important to use a range of different sampling methods (eg AGDS, sidescan, video) in addition to grab to ensure epifaunal communities are also characterised.**

Species population measures – no increase in presence or abundance of named negative indicator species – American razor shell *Ensis directus*; American slipper limpet, *Crepidula fornicata* (CSM discretionary).

American razor shell: Environment Agency Wash Grid surveys (Bailey, Coad & Bamber, 2005) have found increasing numbers of *E. directus* in the Wash. They were found at only 19 of 66 sites sampled in 1991, with maximum number of individuals recorded at one site of 19. This increased to 8 of 14 sites in 1993, 24 of 31 sites in 1999 (when there was a record of over 8,000 individuals at one site) and 39 of 64 sites in 2002. CEFAS surveys of The Wash and North Norfolk coast indicate that populations of *E. directus* within the European marine site are extremely dynamic with recruitment sporadic and frequently failing altogether. They appear vulnerable to storm damage and are short-lived. For example CEFASs 1999 survey was dominated by the 1994 year class with only pockets of survivors from 1993 and 1995 settlements and no razorshell from 1996 or 1997 settlements. Similarly CEFASs 2000-2002 surveys were dominated by the large settlements of the 1998 and 1999 year class – although these were reduced to occupying a few sheltered areas after their second winter and both the 2000 and 2001 settlements didn't survive their first winter. The 2003 surveys indicated that here was a widespread settlement in 2002 (Palmer, 2003). The last stock assessment available to me (Addison et al, 2006) estimates a total stock exceeding 10,000tonnes in The Wash. Although they have been implicated in the very low productivity and die-off of cockle on Daseley's in 2003, there haven't been recent reports of problems with productivity of Wash shellfish. As such, we consider this attribute in relation to *E. directus*, is **favourable** but consider there is a medium – high risk that this attribute could become unfavourable in future. We consider monitoring of shellfish productivity (e.g. from fishers reports) across the site would be a useful indicator of potential problem areas. Other issues that need to be considered are competition for space with other invertebrate communities (although CEFAS suggest the areas they occupy tend to be sparsely populated by other infauna) and impacts on predator populations. It has been proposed that these populations (starfish, crabs) could be being maintained at high levels by the quantity of razorshell present in the site.

American slipper limpet. No baseline. **Not assessed**.

4.4.2.Gibraltar Point & North Norfolk intertidal flats

Have not been assessed due to lack of data / lack of data since baseline.

4.5 Reef of ross worm *Sabellaria spinulosa*

Summary

In contrast with other SAC features we have been able to assess most attributes for this feature. **Extent**, **distribution** and **biotope** composition attributes are all considered to be **favourable** and this feature is considered to be in **favourable condition overall**.

However, reef is vulnerable to damage from shrimp trawls and also seed mussel dredges. This impact will be addressed through the byelaw being developed with ESFJC to close core reef areas to towed gears.

Extent (CSM Mandatory). Target is no change in extent of reef allowing for natural succession / known cyclical change. Baseline is 1846.5ha (composed of several discrete areas of reef, not one continuous feature) from a survey undertaken in November 2005 (Jessop & Stoutt, 2006).

Survey targeted the Lynn Deeps and The Well area of the outer Wash were dense *S. spinulosa* communities have been consistently identified by previous surveys (eg Foster-Smith & Sotheran, 1999; Foster-Smith & White, 2001 & Foster-Smith, 2001). 1,570ha of reef was found in this area, however reef was also found elsewhere: in the Boston Deeps (60ha), Boston Lower Road (36.5ha), East of Roger Sand (169ha) and intertidally (at LWM) at Inner West Mark Knock (11ha).

A repeat survey was undertaken in 2007 although it had less coverage of the inner Wash areas than 2005. Areas common to both surveys were Lynn Deeps / Well and East of Roger. The extent of reef in Lynn Deeps / Well was 780ha and East Roger was 38ha. The apparent reduction in extent of the Lynn Deeps / Well reef may be a result of the reduced survey coverage in 2007 (see fig 1 of Woo, 2008 and Fig 8 of Jessop & Stoutt, 2006) which omitted a significant area east of Sunk Sand which had been surveyed in 2005 and found to support reef. At East of Roger, survey coverage was similar across both years so the reef does seem to have degraded since the 2005 survey. This is a relatively small area of reef but in the 2007 survey was found to have a similar (albeit slightly lower) score to the high scoring reef areas in the Lynn Deeps / Well and Lynn Knock core areas. It is in an area that has been shown to frequently support high densities of *S. spinulosa* from past surveys (eg fig 1.9 Bailey, Coad & Bamber, 2005). The change in reef quality may be a natural change, however it is also in an area where trawling for brown shrimp is known to occur.

The 2007 survey extended further seaward and mapped high scoring reef areas (comparable to the Lynn Deeps / Well reef) at the mouth of The Wash in the Lynn Knock area. The Lynn Knock area has previously been found to support dense S. spinulosa communities in the previous surveys referred to above. This area of reef straddles the boundary of the site and was measured as 910ha in size. Given the quality of this reef which appears consistent over time we consider this area (or at least the portion within the SAC) should be added to the baseline and included in future assessments.

Overall we conclude that this attribute is currently **favourable** however we note that the central core areas are at risk from trawling for pink shrimp and potentially from seed mussel dredging so future prospects are good if the proposed ESFJC closed areas byelaw is put in place to protect reef from towed gears.

Distribution of reef biotope (CSM mandatory). Target is no change in geographic distribution of specified biotopes identified for the site. Baseline distribution is as set out in Jessop & Stoutt, 2006. Most reef is concentrated in the Lynn Deeps, The Well area. However, reef also occurs in the Boston Deeps, Boston Lower Road, East of Roger Sand and intertidally (at LWM) at Inner West Mark Knock.

As noted above a repeat survey was undertaken in 2007. Areas common to both surveys were the Lynn Deep/Well and East of Roger. Reef was present at both these locations. Anecdotal information from ESFJC is that the Inner West Mark Knock reef is also still present. Based on the information available we conclude that this attribute is **favourable**.

Biotope composition of reef (CSM mandatory). Target is to maintain the variety of biotopes identified for the site, allowing for natural succession or known cyclical change. Wash reef biotope identified in Foster-Smith & Sotheran, 1999. They identified two *Sabellaria* biotopes (based on 97.06 classification): CMX.SspiMx.reef - Sabellaria (super-abundant, including reefs) and CMX.SspiMx - Sabellaria / Lanice (see pps 58-59).

ESFJC surveys using Acoustic Ground Discrimination Systems (AGDS) ground-truthed by video and grab have indicated reef biotope is present in the site throughout this reporting round. These surveys focussed on identifying *S. spinulosa* alone.

Although the Natural England-Environment Agency Wash Grid Survey in 2002 (Bailey, Coad & Bamber, 2005) used the updated Marine Habitat Classification it provides detailed information on species composition of Wash biotopes which can enable comparison with the baseline surveys. It shows *Sabellaria* (3 sites) and *Lanice* (12 sites) dominated biotopes occur in The Wash in 2002 (fig 2.1). In relation to the *Lanice* (sandmason worm) dominated biotope, *S. spinulosa* is found at nearly every one of these sites although is only a major component of this biotope at one (Sample site W31).

Given that the *Sabellaria* biotope is the key interest and both it and the *Sabellaria – Lanice* biotope are present we conclude that this attribute is **favourable**.

Topography (discretionary). Target is no alteration in topography of the inshore sub littoral sediment, allowing for natural responses to hydrodynamic regime. No data since baseline. **Not assessed**. ESFJC AGDS surveys may provide topographic information?

Sediment character (discretionary). Target is no change in composition of sediment types across the feature, allowing for natural succession / known cyclical change. See subtidal sandbanks attribute text. **Favourable**.

4.6 Large Shallow Inlet & Bay

Summary

Due to a lack of information on the **extent of entire feature** and **distribution / spatial pattern of habitats** attributes this feature is **not assessed**.

In relation to the **extent** attribute, for the reasons set out under the intertidal flats interest feature above, we have concerns over loss of intertidal habitat due to saltmarsh accretion and erosion of the flats. This is likely to be a significant issue that will need to be addressed through the Shoreline Management Plan 2. SMP 2 will provide more detailed information on impacts upon the features of the site and a process to seek to resolve them.

The **diversity of component habitats** and **water quality** attributes are both considered **favourable**.

Extent of entire feature (CSM Mandatory). Target is that there should be no change in extent of whole feature. Baseline is 63,135ha from The Wash SSSI citation. No recent data. **Not assessed**.

Diversity of component habitats (CSM Mandatory). Target is to maintain the variety of habitats identified for the site, allowing for natural succession/known cyclical change. These habitats are:

Subtidal boulder and cobble communities sub-feature
Subtidal mixed sediment communities sub-feature
Subtidal sandbanks[1]
Intertidal flats[1]
Samphire and other annuals colonising mud and sand[1]
Atlantic salt meadows[1]
Mediterranean saltmarsh scrub[1]
Reef[1]
Saline lagoons[1]

All habitats are still present in the site. Conclude attribute is **favourable**.

Distribution/spatial pattern of habitats (CSM Mandatory). Target is to maintain the pattern of distribution of predominant habitats throughout the feature (ie presence / absence of habitats at particular locations).

Subtidal boulder and cobble communities sub-feature:
MCR.ByH.Flu (Rich faunal Turf dominated by both tall and short bryozoans and hydroids)
ECR.EFaPomByC (Encrusting bryozoans and coralline algae mixed with short tufted bryozoans)
MCR.ByH (Sparse to moderately rich bryozoan/hydroid turf epifauna on a silty gravelly sand substratum with a *Sabellaria* gravel/shell component)

Subtidal mixed sediment communities sub-feature:
IMX.MytX (Sub-littoral mussel beds)

Subtidal boulder and cobble communities sub-feature: No recent data: the Natural England-EA Wash grid survey undertaken in 2002 sampled using grabs and so wasn't as effective at characterising epifauna-dominated communities as the baseline Broadscale Monitoring Project (BMP) surveys which used an Acoustic Ground Discrimination System (AGDS) and video. No survey using similar techniques was undertaken within this reporting period, however grab data from 2002 survey suggests these harder substrates are still present in areas identified by the BMP baseline surveys. In relation to sub-littoral mussel beds (the subtidal mixed sediment communities sub-feature), ESFJC do regularly survey The Wash and found sub-littoral beds in 2004 and 2006. They had previously been identified within The Wash in 1997 and 1998. As such both these sub-features can be regarded as being in favourable condition. See also comments under Subtidal sandbanks, sediment character and distribution of biotopes attributes)

The other habitats (Subtidal sandbanks, Intertidal flats, Samphire and other annuals colonising mud and sand, Atlantic salt meadows, Mediterranean saltmarsh scrub,Reef) are interest features in their own right and details of their distribution can be found elsewhere in this summary. In most cases the relevant attributes (distribution or extent) to enable understanding of relative distribution of these habitats have not been assessed due to lack of data. Consequently this attribute is also **not assessed**. However, as noted under the

[1]Individual interest features in their own right in the site.

intertidal flats interest feature above there is likely to be cause for concern over the boundary between the saltmarsh and intertidal flats features and potential erosion of flats, which needs to be addressed through Shoreline Management Plan 2.

Water quality (CSM mandatory). Target values should default to appropriate national or international standards where appropriate. The specific representation of this attribute depends on the local conservation interest of the feature and takes into account any perceived threat to the system. In The Wash nutrients (algal mats) have been highlighted as a potential issue in the past.

The Environment Agency have undertaken extensive monitoring of water and sediment quality in The Wash using a wide range of methods. The monitoring reflects that The Wash catchment is largely rural in that marine water and sediment analysis (including ecotoxicological assessments) show it is has good quality with contaminants (eg metals, organic and synthetic substances) absent or at very low levels. The large agricultural catchment does result in hyper-nutrification in the large shallow inlet and bay but excessive algal growth doesn't occur due to high tidal flushing rates and high turbidity. The Environment Agency have undertaken aerial surveys of The Wash in late summer to detect algal mats and have note found excessive growths. Mats that do develop tend to be removed by winter storms. Conclude attribute is **favourable**.

4.7 Common (Harbour) seal

Summary

This feature is assessed as **unfavourable declining overall** due to the unfavourable condition of **seal population present during moulting season** attribute. The Wash seal population has dropped by 43% since the Phocine Distemper Virus epidemic in 2002 while the Blakeney population has increased slightly or remained stable. This is an issue that needs to be investigated particularly since the Wadden Sea population has been increasing by 15% per annum since 2002. The Wash situation does mirror trends elsewhere in the UK - both the Orkney and Shetland populations have declined by 40% over the same period.

In contrast the **distribution of breeding seals** and **seal population present during breeding season** attributes are both assessed as favourable. Pups are widely distributed across The Wash and production in 2006 was double the 2001 level.

Extent - Distribution of moulting harbour seals within the site (CSM mandatory). Target is that there should be a stable or increasing area of usage within the site.

Moulting seals widely distributed around site. Key areas for moulting seals include Inner Dogs Head; Black Buoy; Toft East; Kenzies Creek, Fleet Haven and Evans Creek (Holbeach); Thief West, Seal Sand in The Wash and at Blakeney Point. Need recent data from SMRU. **Not assessed**.

Population - Number of harbour seals present during moulting season in the site (CSM mandatory). Target - a stable or increasing number of harbour seals present throughout the site, measured during the moulting season. Seals are resident in site throughout year.

Since SMRU surveys began the peak count in The Wash has been c. 3,000 seals achieved in 1988 and in 2000-2002 prior to the two PDV epidemics. After the 1988 epidemic the seal population dropped by approx 50% to c. 1,600 seals in 1989 before increasing gradually until a population of c. 3,000 was attained in 2000. Following the 2002 epidemic The Wash population decreased by 22% in 2003 to c.2,500 seals and has since declined gradually further (2004: c. 2200, 2005: c. 2100, 2006: c. 1,700). At Blakeney Point the peak count was c. 900 seals attained in 2000 which dropped to c. 400 in 2003 after the PDV outbreak but has been increasing or constant since then (2004: c. 650, 2005: c. 700, 2006: c. 700). Since harbour seals highly mobile important to consider the numbers and distribution of seals in areas adjacent to the SAC to put local population into context. At Donna Nook, peak population reached over 400 seals in 2000, decreased to 231 following PDV and like Blakeney has generally increased or remained constant since then to c. 300 in 2004, c. 400 in 2005 but appears to have decreased in 2006 to c. 300.

Site	**Year**						
	2000 (4/12 Aug)	2001 (4 Aug)	2002 (11/12 Aug)	2003 (9/10 Aug)	2004 6/14 Aug)	2005 (9 Aug)	2006 (15 Aug)
The Wash	2528 3029	3194	3037 2916	2529 2497	2126 2167	1768 2124	1695
Blakeney Point	895 Disturb	772	346 631	399	577 715	741 677	719
Donna Nook	435 345	233	341	231	242 346	372 470	299

Any increase at Donna Nook / Blakeney Point doesn't seem to account (eg if seals re-distributed) for the number lost from The Wash, for example there were c. 400 less seals in The Wash between 2005 and 2006 while the Blakeney and Donna Nook populations were stable in these years. The fact that the Wash population is continuing to decline (eg 12% lower in 2006 than 2005, and a 43% decline since 2002) is a cause for concern and requires further investigation.

Declines have also been recorded elsewhere in the UK, the Orkney and Shetland populations have both fallen by approximately 40% from 2001-2006 with more or less constant populations recorded in Moray Firth, Western Isles and Firth of Tay. This situation contrasts markedly with the Wadden Sea population that has been increasing at around 15% per year since 2002.

Due to the apparent decline in The Wash population we conclude that this attribute is **unfavourable declining**.

Extent - Distribution of breeding harbour seals within the site (Discretionary). Target is that there should be a stable or increasing area of usage within the site. We have been funding SMRU to undertake annual aerial breeding surveys in June / July (data from 2001, 2004, 2005 and 2006) (Thompson, 2007).

Pups widely distributed with high proportion of pups born along creeks in southern edge of Wash on Holbeach range and in vicinity of Black Buoy, Toft and Mare Tail. However, recent increase (since 2006) in proportion born on outer banks of Eastern (Seal, Thief, Hull and Pandora Sands) and Western Wash (eg Long Sand, Friskney) (Thompson, 2007).

Conclude attribute is **favourable**.

Population - Number of harbour seals present during breeding season in the site (Discretionary). Target - a stable or increasing number of harbour seals present throughout the site, measured during the breeding season.

Breeding success is a more sensitive index of current population health than moult counts. The latter are undertaken when the highest / most stable numbers of seals haul-out and so best detect medium to long term changes in population size. If it is assumed that the survey date each year is within a few days of peak pup production (annual data is based on a single aerial survey) then pup production appears to be increasing in The Wash. Numbers have increased from 550 seals in 2001 to 1013 in 2006. A similar trend in pup production was observed following the 1988 epidemic. However, there was a notable jump in production between 2005 when 651 seals were counted and the 2006 count of 1013 pups which occurred despite an apparent continued decline in abundance of adult seals shown by the moult counts. SMRU note that there isn't a plausible explanation for this jump in production – it may be linked to a major change in distribution, fecundity or haulout behaviour that occurred between these two years.

Since the pup surveys are based on single aerial surveys per year work is being undertaken using a series of multiple counts this year to get a better understanding of peak pupping dates to inform best dates for future monitoring and provide confidence intervals on pup production estimates.

On the basis of current information conclude this attribute is **favourable.**

4.8 Otter

Summary

This feature is **not assessed** since information is lacking on several attributes. However, the **otter population – coastal attribute** is considered to be **unfavourable recovering** and **toxic chemicals** attribute is **favourable**.

Food availability (CSM Mandatory). Target: fish biomass stays within expected natural fluctuations. No baseline. **Not assessed.**

Habitat requirements coastal areas: Freshwater for rinsing sea salt from the fur (CSM Mandatory). No baseline. **Not assessed.** No reduction in overall availability of freshwater.

Toxic chemicals (CSM Mandatory). No increase in pollutants potentially toxic to otters. Environment Agency Review of consents exercise for The Wash and on-going water quality monitoring of the site didn't indicate any significant elevated levels of toxic chemicals above environmental quality standards so consider this attribute is **favourable**.

Otter population – coastal (CSM Mandatory). No decline in otter distribution or abundance.

Baseline is from national survey reports and data held on National Biodiversity Network (which may be associated with the national survey). Interrogation of full survey data set held on National Biodiversity Network reveals otter present in Wash at Snettisham coastal marshes (1978) and close to site on R. Babingley (Hillington, Castle Rising, Wootton – all 1978) and R. Ingol (Sluice Gate, 1978). In north Norfolk dataset reveals otter present at R. Stiffkey (Sluice Gates, 1978, 1992), R. Burn (Burnham Overy, 1978), Titchwell (1978) and Holme Nature Reserve (1978). Otter appear to make use of the smaller rivers adjacent to the site and coastal areas within the site.

A further national survey was undertaken 2000-02, during the last reporting cycle. It should also be noted that the survey only covered the coast from Nene to Blakeney and a short section near Friskney (due to survey methodology of only surveying alternate 50 km-squares). Interpretation of the broadscale maps produced for the survey report suggests new positives were found on river systems **close to** the site on the Rivers Steeping and Babingley. The National Biodiversity Network has two records close to the site from the R. Steeping (Wainfleet all Saints & Firsby Clough - both are from 2001) and one from the R. Babingley (Sluice Gates near Vinegar Middle, 2000). There were no on-going positives and many negatives in the squares surveyed but this is generally consistent with the previous national surveys, except perhaps for North Norfolk where six otters were introduced between 1987 and 1992 but despite this there has only been one positive sighting in both the 1991-1994 and most recent national survey. Given otter populations are still recovering from their population decline from the 1950s – 1970s which followed the introduction of persistent organochlorine pesticides and there are new records and the lack of on-going positives and many negatives is generally consistent with previous surveys we conclude that this attribute is **unfavourable recovering.** Attention should be paid to the north Norfolk population in future surveys to understand why the population does not seem to be recovering as well as it is elsewhere in Anglian region where there have been introductions. Information on otter presence in the un-surveyed boxes would also be useful.

Anthropogenic mortality (CSM Discretionary). Otter populations not significantly impacted by human induced kills. No baseline. **Not assessed**.

5. Summary of unfavourable condition assessments that require management action

Gibraltar Point SPA	
Interest feature / attribute	**Issue**
All features: Habitat extent	Need for baseline data

The Wash SPA	
Interest Feature / attribute / sub-feature	**Issue**
Regularly occurring migratory species. • Population size: shelduck, turnstone	Decline in population below favourable condition thresholds. Other species currently favourable but with negative population trends that merit further investigation: dark-bellied brent goose, grey plover, dunlin, ringed plover, sanderling
All features. Habitat extent	Need for baseline data

North Norfolk SPA	
Interest Feature / attribute / sub-feature	**Issue**
Annex 1 breeding birds. • Population size: little tern, ringed plover, common tern	Decline in population below favourable condition thresholds. Other species currently favourable but with negative population trends that merit further investigation: sandwich tern. Also Brent goose (regularly occurring migratory species feature)
All features: Habitat extent	Need for baseline data

The Wash & North Norfolk Coast SAC	
Interest Feature / attribute	**Issue**
Samphire & other annuals colonising sand & mud: all attributes	Need for survey to provide information to assess against baselines
Atlantic salt meadows: all attributes	Need for survey to provide information to assess against baselines
Mediterranean saltmarsh scrub: all attributes	Need for survey to provide information to assess against baselines
Lagoon: all attributes	Suspected water quality impacts in lagoons. Survey in progress of water quality and hydrology of the lagoons to confirm whether or not there is a problem and potential source/s.
	Concerns over impact of new unregulated development in lagoons (eg quays, jetties) on extent of lagoons and isolating barrier (the shingle ridge). To be addressed through planning process.
	Need for survey to provide information to assess against baselines.

The Wash & North Norfolk Coast SAC cont…	
Interest Feature / attribute	**Issue**
Intertidal mudflats and sandflats: • Species population measures – maintain abundance of cockle	Very substantial reduction in cockle abundance on le Strange Estate linked to unsustainable fishing activities. Seeking to agree management agreement with fishery tenant at present
Intertidal mudflats and sandflats: • extent • topography	Concerns over reduction in extent of intertidal flats and changes to shore topography. To be further investigated through information coming available through the Shoreline Management Plan process.
Intertidal mudflats and sandflats: • extent • topography • sediment character • biotope composition • distribution of biotopes (except Wash cockle and mussel) • extent of *Zostera* biotope (Norfolk only) • species composition of notable biotopes – *Macoma Arenicola* dominated biotopes • negative indicator species – Pacific oyster	Need for survey to provide information to assess against baselines. Intertidal sediments and invertebrate communities of The Wash being re-surveyed this winter.
Subtidal sandbanks: • extent • topography • sediment characteristics (Norfolk & Gibraltar Point only) • distribution of biotopes • extent of sub-feature • species population measures – no increase in abundance of named negative indicator species – American slipper limpet	Need for baseline data / survey information to assess against baselines.
Subtidal sandbanks • species population measures – no increase in abundance of named negative indicator species – American razor shell	Not considered unfavourable at present. But concerns over competition for food with other suspension feeders, potential impacts on predator populations. Would be useful to monitor shellfish productivity.

The Wash & North Norfolk Coast SAC cont…	
Interest Feature / attribute	**Issue**
Large shallow inlet & bay: • extent of entire feature • distribution / spatial pattern of biotopes	Need for baseline data
Reef: all attributes	Reef is vulnerable to damage from shrimp trawls and also seed mussel dredges. ESFJC developing a byelaw to close core reef areas to towed gears.
Common seal: • Number of seals present during the moulting season in the site	Very significant decline in moult counts over reporting period.
Common Seal: • extent	Need for baseline data
Otter • food availability • habitat requirements coastal areas: Freshwater for rinsing sea salt from the fur • anthropogenic mortality	Need for baseline data