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# Lincshire 2010 - 2015

## Scoping Report

(July 2009)

Revision	Date	Reason for Revision
1	29/04/09	Scoping Consultation Document. Draft for review
2	12/05/09	Scoping Consultation Document. Issue to Consultation
3	12/06/09	Scoping Report. Draft for review
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**Published by:**

Environment Agency  
Rio House  
Waterside Drive, Aztec West  
Almondsbury, Bristol BS32 4UD  
Tel: 0870 8506506  
Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

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# Summary

The Lincolnshire Shoreline Management Plan (SMP) established a policy of 'hold the existing defence line' for the Lincshore coastline. As part of the Lincshore Coastal Defences Strategy (covering Donna Nook to Skegness) we are proposing to implement the SMP. To deliver the strategy, beach nourishment material will continue to be placed annually along the coastline between Mablethorpe and Ingoldmells. A performance review of the beach nourishment project has been undertaken, in preference to a full strategy review, which supports the Lincshore project, enabling a 0.5% annual probability of flooding (1 in 200 year return period) standard of protection along the frontage over a period of 100 years. Initial consultation was undertaken in April 2009 with statutory and non-statutory consultees. The aim of this Scoping Report is to present the findings of the scoping stage undertaken for the Lincshore Coastal Defences Strategy Project Appraisal 2010 – 2015 and to take them into account within the scoping process. This report also provides a record of consultation with relevant consultees.

The main positive benefit of the scheme, which provides the socio-economic justification for the major expenditure involved, will be the protection and maintenance of the existing line of defence. This will manage the coastal flood risks to 18,386 properties, approximately 35,000ha of land and areas of ecological interest that would otherwise be at risk of permanent loss by encroachment of the sea under a do-nothing policy.

This scoping assessment has identified several potentially significant topics requiring further consideration. The key issues 'scoped in' to the assessment process will be investigated further through the next stage of the EIA. The topics 'scoped out' will not require further consideration, although appropriate management will be required during operation of the proposed scheme to minimise any potential impacts.

The topics '**scoped in**' to the environmental assessment process are:

- Soil, Geology and Hydrogeology;
- Coastal Processes;
- Biodiversity and Fisheries;
- Population, Economy and Employment;
- Landscape Character;
- Bathing Water Quality;
- Cultural Heritage and Historic Environment; and
- Cumulative Effects.

Those issues which have been '**scoped out**' are:

- Services and Material Assets;
- Air and Climate;
- Noise and Vibration;
- Land Use and Urban Regeneration;
- Traffic and Transport and
- Resource Efficiency.

This Scoping Report will be issued to Environment Agency specialists, external statutory consultees and interested parties to present the findings of the scoping process. Appropriate consultation in relation to issues identified will continue through the ongoing design and operation of the proposed works.

We will use this Scoping Report and the data received from consultees to guide the need for further investigation and production of the Environmental Statement. We will continue

to consult stakeholders, appropriate to the issues identified, through the detailed design and construction phases of the scheme. Particularly we will continue discussion with the fisheries industry regarding the environmental monitoring methodology, and the Lincolnshire Wildlife Trust and Natural England regarding coastal geomorphology at Gibraltar Point. This will be documented as part of the Environmental Statement.



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# 1 Introduction

The aim of this Scoping Report is to present the findings of the scoping assessment, to outline the proposed works and to provide a summary of baseline conditions undertaken for the Lincshore Coastal Defences Strategy Project Appraisal 2010 – 2015. This document has been prepared in accordance with the Environment Agency Environmental Impact Assessment (EIA) Agency Management System (AMS). This document will also form part of the documentation required to gain internal approval for the project.

The purpose of this Scoping Report is to:

- Provide a record of the scoping process;
- Identify the methodology for undertaking the assessment and evaluation stage of the EIA;
- Identify what issues have been ‘scoped out’ of the EIA and the rationale for this;
- Identify what issues have been ‘scoped in’ and require further assessment;
- Identify opportunities;
- Provide a record of the options appraisal process; and
- Provide a record of the consultation with statutory bodies and interested parties.

## 2 Baseline Summary

### 2.1. Introduction

We are responsible for maintaining the coastal defences that provide protection to 24 km of the Lincolnshire coastline between Mablethorpe (NGR TF509851) and Skegness (NGR TF574677), referred to in this document as the Lincshore coast.

The Lincshore Coastal Defences Strategy Project Appraisal 2010 – 2015 ‘project area’ covers the coastline between Mablethorpe and Skegness. The ‘project area’ is subdivided into ‘profile sections’, between ‘profile sections’ number 1 (north of Mablethorpe) to ‘profile sections’ number 110 (south of Skegness). The proposed works for Lincshore 2010 – 2015 are anticipated to cover the coastline between Mablethorpe and Ingoldmells, from ‘profile sections’ number 10 (at Mablethorpe) to ‘profile sections’ number 83 (at Ingoldmells) (Section 2.2.1). The area between profiles 10 and 83 is approximately 19 km in length and is referred to in the document as the ‘extent of the proposed works’ (Appendix 1 - Figure 1).

Nourishment operations will be undertaken in temporary sections moving along the coast within the ‘extent of the proposed works’. The ‘working area’ is within the ‘extent of the proposed works’ and is defined as the section of beach in use for nourishment operations, and extending up to 1 nautical mile offshore. The ‘working area’ is subdivided into the ‘landside’ (site compound and access arrangements for machinery to get to the beach) and ‘marine’ (the recharge area along the beach extending up to 1 nautical mile offshore).

The ‘study area’, for which the baseline has been reviewed and impacts considered in this scoping assessment, is defined as the ‘extent of the proposed works’, extending south to Gibraltar Point, the hinterland up to 1 km inland and extending up to 1 nautical mile offshore.

## 2.2. Context of the Project

The Mablethorpe to Skegness Defences Study was prepared in 1991 (Posford Duvivier, 1991). This study identified the need for defensive works to be implemented along the Lincolnshire coastline. In 1996 the Lincolnshire Shoreline Management Plan (SMP) (Posford Duvivier, 1996) was prepared to provide a cohesive approach to coastal defences along the Lincolnshire coast. The Lincolnshire SMP covers the Lincshire sea defences and established a policy of 'hold the existing defence line' for the Lincshire coast.



**Photo 1 – Aerial view of the beach at Lincshire during nourishment**

Following the SMP, the study was updated into the Lincshire Coastal Defences Strategy Study in 1997. This Coastal Defences Strategy evaluated the sustainability of the coastal defences protecting the Lincshire coastline between Donna Nook (Appendix 1 - Figure 1 Inset) and Skegness. Beach nourishment was identified as the best option to implement this strategy.

The strategy was reviewed in 2004 and again identified beach nourishment as the most economically sustainable option. The strategy identified that the main issue affecting the coastal defences was lowering of the beaches, through the affects of wave energy and rising sea level, which leaves the seawalls vulnerable to erosion. It concluded that the preferred strategy, to reduce the risk of flooding, was to hold the line over a period of 50 years, with the aim of reducing the risk of coastal flooding to a 0.5% annual probability of flooding (1 in 200 year return period).

In accordance with Agency EIA guidelines, a Strategic Environmental Assessment (SEA) was prepared as part of the 2004 strategy review process to cover the recommended works. "An SEA is a systematic process for evaluating environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations" (Sadler & Verheem 1996). The review was also accompanied by a Beach Management Plan (Environment Agency, 2004c). The Beach Management Plan discusses how the beach profile levels will be monitored, classified and maintained. The Plan recommended annual monitoring of beach profile elevation levels (cross sections) through a Beach Profile Survey (Section 2.2.1.4).

The 2004 strategy review supported the continuation of the existing strategy. As a result, the 2005 to 2009 project continued the beach nourishment to defend the Lincshore coast to a 0.5% annual probability of flooding (1 in 200 year return period). In 2009 in preference to a further full strategy review a performance review of the existing strategy was undertaken. It confirmed that the current strategic option of beach nourishment is still the most economically viable option (Section 2.2.1).

The Lincolnshire SMP is currently being updated and incorporated into the Flamborough Head to Gibraltar Point SMP with a completion target of March 2010. The Lincshore Coastal Defences Strategy is presently proceeding on the assumption that the generic 'hold-the-line' SMP policy for this frontage will be sustained over at least the short term (0 to 20 years SMP epoch).



**Photo 2 – Profiling of Beach**

## 2.2.1 Proposed Works 2010 to 2015

The 'extent of proposed works' is defined in Section 2.1 and is subdivided into 'profile sections'. The 'profile sections' are transects across the beach which are identified by a GPS coordinate and used to monitor the beach levels.

The proposed works covered by this Scoping Report comprise:

- **Annual beach nourishment** (Section 2.2.1.1) for the next five years to address the long-term shortfall in sediment supply and sea level rise (SLR) and sustain the defence standard to 0.5% (1 in 200 year);
- **Removal of exposed timber groynes** (Section 2.2.1.2) The groynes are no longer functioning as a sea defence;
- **Beach recycling.** (Section 2.2.1.3);
- **Monitoring of beach levels** (Section 2.2.1.4) along 'profile sections' to inform beach management decisions; and
- **Annual monitoring of environmental parameters** (Section 2.2.1.5) to confirm that any environmental effects of the project are consistent with the findings of the environmental assessment and to identify, at an early stage, any unexpected significant adverse affects of the proposed works.

Locations requiring annual nourishment during the period 2010 to 2015 will be determined each year from the annual Beach Profile Survey (Section 2.2.1.4). Works undertaken during the 2010 to 2015 period will be within the extent of proposed works and are expected to concentrate on annual nourishment of 'erosion hotspots'. Erosion hotspots are defined as areas where regular nourishment has been required over the period from 2004 to 2009 (Appendix 3).

The size of material used for nourishment will be considered during the environmental assessment process and is expected to be the same as the 2005 -2009 campaign, within a maximum range of between 0.063mm and 10.00mm. This report does not include an environmental assessment of the sites used to source dredged material. The source sites are covered under a separate environmental assessment which is prepared by the licence holder and accompanies the dredging licences for each site (Section 2.3.13).

### 2.2.1.1 Annual Beach Nourishment

Based on previous works it is envisaged that the nourishment material will be sand, dredged from a licensed offshore dredging site. The dredger will couple to a pipeline which leads to the beach and pump the nourishment material onto the beach. The nourishment material will be shaped into the design profile using land-based plant.



**Photo 3 – Onshore Pumping of Beach Nourishment**

### 2.2.1.2 Removal of Exposed Timber Groynes

Any exposed timber groynes will be removed as they no longer function to hold material on the beach. The groynes will be removed by carefully excavating sand to the level of the lowest boards on the groyne. The boards will be removed from the groyne piles and the groyne piles will be pulled out using an excavator.

### 2.2.1.3 Beach Recycling

There may be potential to recycle material within the 'extent of proposed works' (Mablethorpe to Ingoldmells). Where the areas within this zone accrete sand, to a level greater than required for 0.5% annual probability of flooding (1 in 200 year return period), sand could be relocated to areas in need of additional material (Environment Agency, 2004c). Surplus sand is defined as beach material in excess of the required design beach profile 0.5% annual probability of flooding (1 in 200 year return period). This operation would be undertaken using land based plant.



#### 2.2.1.4 Monitoring of Beach Levels

A Beach Profile Survey is undertaken by walking each profile section (refer to Section 2.1) using GPS elevation measuring equipment to record beach levels. The results of the survey identify deficiencies below the required design profile levels (i.e. the beach profiles which provide the required standard of protection) and inform the locations of annual nourishment for the subsequent year.

#### 2.2.1.5 Annual Monitoring Of Environmental Parameters

Environmental monitoring has been carried out to establish the impacts of the scheme on the natural physical processes for this area. Between 1996 and 2001, sampling was undertaken on a tri-annual basis (spring/ summer/ autumn). Based on the results obtained there was no apparent relationship between nourishment operations and benthic and epibenthic abundance, and species composition. Therefore it was considered appropriate to amend the monitoring methodology from a tri-annual basis to an annual basis from 2002. Monitoring has been used to identify any potential affects on marine animals inhabiting the beach, near shore sediments and along the coastline. In addition, these surveys have evaluated any potential adverse effects on fisheries and in particular the inshore brown shrimp fishery.

The current monitoring programme studies the following components:

- Benthic invertebrates (animals living in the beach sediment).
- Subtidal epibenthic fauna (mobile animals living on or near the sea bed below the low water mark).
- Sediments (particle size analysis to examine the range, size and distribution of beach sediments and their associated chemical properties).

The monitoring methodology will be reviewed as described in Section 2.4.

#### 2.2.1.6 Timing of works and Access

Access to the existing beach for construction vehicles involved in the nourishment operations will be from 'vehicle beach access points' shown in Appendix 1 – Figures 2-8.

Based on previous works it is anticipated that annual nourishment and recycling will be undertaken between April and June, annually, over a period of approximately 10 weeks. The potential timing of works will be reviewed as the project develops, taking into account holiday periods at known tourist locations. The removal of timber groynes will take place during the same period as the nourishment, if required.

Monitoring of beach levels to determine areas required to be nourished will be undertaken in January of each year, over a duration of approximately one week.

Annual monitoring of environmental parameters will be undertaken in September at the end of the annual nourishment period.

### 2.3. Existing Baseline

The study area is defined in Section 2.1.

As this project implements the Lincshore Shoreline Management Plan preferred option of 'hold the line' and the Lincshore Coastal Defences Strategy option of 'beach nourishment', consideration is not given to the potential effects of the 'do nothing' option. The baseline as described within this section therefore considers only the features within the 'study

area' as defined above, and not within the wider flood risk area beyond the 1 km hinterland.

A review of the existing environmental setting has been undertaken through a desk study including a review and an update of previous environmental assessments and documentation. This desk study comprised:

- A review of the previous Environmental Statement covering the previous phase of works (Environment Agency. 2004d).
- A review of the Strategic Environmental Assessment (SEA) (Environment Agency. 2003)
- Consideration of previous Lincshire Strategy Review (Environment Agency, 2004a) baseline information.
- A review of annual environmental monitoring data (Environment Agency 2008a and Environment Agency. 2009b).
- Consideration of stakeholder consultation (Appendices 5 and 6).
- Consideration of previous strategy reviews stakeholder consultation.

Data has also been obtained through discussions with Environment Agency internal functional specialists, Natural England, Lincolnshire Wildlife Trust, Eastern Sea Fisheries Committee, Lincolnshire Biodiversity Partnership, English Heritage and through the following websites:

- The Environment Agency [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)
- DEFRA Multi-Agency Geographic Information for the Countryside (MAGIC) [www.magic.gov.uk](http://www.magic.gov.uk)
- Natural England [www.naturalengland.org.uk](http://www.naturalengland.org.uk)
- East Lindsey District Council Local Plan [www.e-lindsey.gov.uk](http://www.e-lindsey.gov.uk)
- UK Biodiversity Action Plan (BAP) [www.ukbap.org.uk](http://www.ukbap.org.uk)
- UK National Air Quality Achieve [www.airquality.co.uk](http://www.airquality.co.uk)

## 2.3.1 Soil, Geology and Hydrogeology

There are three Regionally Important Geological Sites (RIGS<sup>1</sup>) and Chapel Point to Wolla Bank Sites of Special Scientific Interest (SSSI)<sup>2</sup> within the area of proposed works which are designated for their geological and geomorphological interest. In addition, Gibraltar Point SSSI, is situated approximately 4 km south of the extent of proposed works, is described partly for its geomorphological interest. These sites are listed and described with the designated nature conservation sites in Table 1 (Section 2.3.3.2).

## 2.3.2 Coastal Processes and Geomorphology

### 2.3.2.1 Geomorphology

The Lincolnshire coastline is bounded by the Humber and the Wash estuaries and aligns north-south from Gibraltar Point to Ingoldmells and north-north-west from Ingoldmells to Donna Nook. The coastline is exposed to the North Sea and is characterised by sandy beaches, backed by dune and saltmarsh at the northern and southern ends of the Lincshire frontage and by hard defences between Mablethorpe and Skegness.

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<sup>1</sup> RIGS are designated for geological features of regional interest and are identified by the planning authority and the Lincolnshire Wildlife Trust. These sites have no formal legal protection.

<sup>2</sup> Designated under the Wildlife and Countryside Act 1981 (as amended).



The beaches of Lincshire are underlain by boulder clay. Prior to nourishment works the beach comprised a thin veneer of sand. There is a limited sediment supply to the coast which results in a net loss of material from the beaches.

The bathymetry of the offshore area between Mablethorpe and Skegness is relatively flat (Environment Agency. 2004c). The natural beach material on the north-east Lincolnshire coast is derived largely from the erosion of the Holderness coast and also from offshore banks (Robinson. 1970). To the north east, these banks feed Trusthorpe, Theddlethorpe and Saltfleet Overfalls (Appendix 1 - Figure 1), which in turn supply sediment to the Saltfleet nearshore banks and south west to the Skegness nearshore banks (Environment Agency. 2004a) (Appendix 1 – Figure 10).

The sedimentology of the 'study area' is strongly influenced by the nourishment works. Sediment sampling prior to the nourishments indicated the sediments were largely well sorted fine sands, but sediments are now considered to be coarser and moderately-well to poorly sorted (Blott & Pye. 2004; Environment Agency. 2008).

### 2.3.2.2 Physical Regime

The Lincshire coastline is macrotidal, meaning that it experiences 'large tides', with a tidal range of 6 m for mean spring tides and 2.8 m for mean neap tides (Admiralty, 2008). However, extremes analysis indicates storm surge tides may exceed astronomical tides by up to 2m (Environment Agency. 2004d).

There are two main sediment transport pathways along the Lincshire coast: via the central north-north eastern channel between the Silver Pit and the Wash and via southerly longshore transport, which is roughly parallel to the Lincolnshire coastline. Most of the southerly transport that feeds into the Wash takes place in the nearshore zone. These pathways are most pronounced on surges and spring tides and diminish to a local effect around the entrance to the Wash on neap tides. The two pathways ultimately join near the entrance to the Wash, where the southerly flow feeds sediment via the Gibraltar Point nearshore banks into the central channel of the Wash (HR Wallingford, 2002) (Appendix 1 – Figure 10).

In addition to the sediment transport pathways into the Wash, offshore banks feed sediment northwest and southwest towards the coast. To the north (near Donna Nook), this sediment feeds into the nearshore banks, inshore bar and beach system thus connecting into the net southerly longshore transport system (Environment Agency. 2004c).

Although the dominant longshore sediment transport regime is acting to move sediment in a southerly direction, cross-shore transport appears to be acting in the short term to redistribute sediment from the upper profile to the lower, providing additional material to the longshore sediment pathway, and consequently lowering beach levels as there is a limited supply of sediment to the shoreline to replace losses. Coarser material present in the upper profile indicates that finer sediment is being preferentially transported and deposited in the subtidal zone.

In considering future coastline behaviour, a useful basis for the comparison of effects is the scenario of a completely unmodified Lincshire coastline (sourced from Halcrow, 2002). On the unmodified coastline, ongoing sea level rise, accelerated by climate change, would cause coastal erosion. The medium to coarse eroded sediment would be carried by longshore transport (via beach face and inshore bars) to down-coast areas including Gibraltar Point. Fine eroded sediment (silts and clays) would be carried offshore/alongshore and deposited in sheltered environments, including the Wash. It is expected that the resulting sediment supply in the unmodified environment would be a similar order of magnitude to that provided by nourishment. Essentially, nourishment is supplying what would be supplied naturally by backshore erosion if the coastline were

unmodified. From this perspective, therefore, nourishment is not considered to have significant adverse effects on down-drift areas (Environment Agency. 2004e).

In future, it is likely that trends of accretion and erosion will be similar to those seen subsequent to the nourishment works already undertaken. North of Mablethorpe and up to Donna Nook (outside of the 'study area') beaches have had periods of accretion and erosion, but are generally stable overall. Immediately south of Skegness (outside the extent of proposed works) for approximately 1 km the trend, which begins to the north of Lagoon Walk, is to erosion (Lincshore Beach Re-nourishment Performance Review Report. 2008. Appendix 1, Table 6f). Within the extent of proposed works, the beach is likely to continue to deplete at the erosion hotspots and accrete elsewhere (refer to section 2.2.1).

## 2.3.3 Biodiversity and Fisheries

### 2.3.3.1 Summary of Environmental Monitoring

Since 1996, the environmental monitoring programme for the Lincshore beach nourishment has assessed the composition of the communities of marine benthic and epibenthic fauna at a number of locations, within and outside the 'study area'. Surveys have been used to determine the effect of the scheme on the physical and biological environment, in particular the composition and movement of beach material and its effect on surrounding areas, and to identify effects on flora and fauna (especially the intertidal benthic infaunal and subtidal epibenthic communities) in the 'extent of proposed works'. In addition there has been an evaluation of any effects on fisheries (particularly the brown shrimp fishery) and also to determine whether the scheme affects the Gibraltar Point National Nature Reserve (Environment Agency. 2009b).

The 2008 monitoring results are in good agreement with previous monitoring in the area, suggesting a progressive coarsening of the sediments, an increase in carbonates (i.e. shell material) and a reduction in the degree of sorting at the upper and lower shore sites within the nourishment zone and the sites southward (downstream) of the recharge zone. Therefore, it appears that the beach nourishment has a direct impact on sediment composition of the beach profile at these sites. However, no significant effects on the intertidal benthic infauna were found between these sites and those at similar elevations outside the nourishment zone. Differences in benthic assemblage were found between high and low shore sites across all transects regardless of nourishment zone. The species comprising the assemblages differed across survey years, but all were typical of moderately-exposed mobile sandy beaches (Environment Agency. 2009b).

Additional differences in sediment texture were found at the lower beach sites south of the 'extent of proposed works', a feature probably related to local hydrodynamic processes rather than the beach nourishment programme. Such a variation in the hydrodynamic regime was also suggested by the salinity change found in the southern transects (Environment Agency. 2009b).

The brown shrimp (*Crangon crangon*) was the most abundant epifaunal species and the different surveys had a very similar list of accompanying species and abundances. Many of these species are juvenile forms of commercially targeted fish and this highlights the role of the area as nursery ground. There were no differences in brown shrimp size with regards to the nourishment zone although there were differences between years. The total annual volumes of brown shrimp recorded during environmental monitoring are given in Appendix 7 Table 15 of this report. The variation in abundance does not appear to be related to the nourishment operations but to local processes (Environment Agency. 2009b).

Comparisons of the current benthic invertebrate communities and baseline conditions prior to beach nourishment (Environment Agency. 2009b) have indicated an increase in

species richness following beach nourishment, as works have provided suitable habitat for these species with the replacement of coarser sediment along the coastline with sandy substrate. Currently, there is some indication of a slight difference in beach communities between sites inside and outside the nourishment zone and particularly with regard to the low shore sites. Sites outside or at extreme ends of the nourishment zone tend to be characterised by larger worms and small crustaceans and slightly higher numbers of species were recorded in the midshore outside the nourishment zone.

Surveys of the animals living on or just above the seabed close to the shore (epibenthic animals) have been undertaken at five locations along the coast (Environment Agency, 2009b). These have recorded a variety of species including small crustaceans such as shrimps and crabs, in addition to a range of fish species such as sand goby *Pomatoschistus minutus*, pipefish *Syngnathinae* sp., plaice *Pleuronectes platessa*, herring *Clupea harengus* and dover sole *Solea solea*. The most abundant epibenthic species is the brown shrimp *Crangon crangon* which forms an important inshore fishery, and the isopod crustacean *Idotea linearis*. The surveys have indicated considerable seasonal and annual variation in the size and abundance of the catch of brown shrimp throughout the sampling period, but have provided no evidence that the beach nourishment works have had significant negative impacts on either inshore brown shrimp populations or other species of epibenthic invertebrates. These differences could be due to differing weather and tidal conditions between surveys, combined with the fact that such animals are highly mobile so changes over time are likely to occur naturally.

### 2.3.3.2 Statutory Nature Conservation Designations

Table 1 lists nationally and internationally important nature conservation sites located within the 'study area' or its potential zone of influence.

Table 1 - Statutory nature conservation designated sites along the Lincshire coast, and their main interest features

Designation	Interest features
Gibraltar Point Ramsar site <sup>3</sup>	<p>Dune and saltmarsh habitats representative of all stages of colonisation and stabilisation and a fine example of a freshwater marsh (Ramsar Criterion 1).</p> <p>Assemblage of wetland invertebrate species, of which eight are listed as rare in the British Red Data Book (Criterion 2).</p> <p>Assemblage of over 20,000 waterfowl, actually &gt;53,000 (Criterion 5).</p> <p>Over 1% of the relevant international population of three bird species: grey plover, bar-tailed godwit, knot <i>Calidris canutus</i> (Criterion 6).</p> <p>(Appendix 1 – Figure 9).</p>

<sup>3</sup> Designated under the 1971 Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat

Designation	Interest features
The Wash Ramsar site	<p>A large shallow bay which is one of the largest and most important areas of estuarine mudflats, sand banks and saltmarsh in UK (Ramsar Criterion 1) (Appendix 1 – Figure 9).</p> <p>Inter-relationship between its various components forming the basis for the high productivity of the estuary (Criterion 3).</p> <p>Waterfowl assemblage of international importance (of &gt; 290,000 passage and over-wintering waders) (Criterion 5).</p> <p>Bird species/populations occurring at levels of international importance: pintail, pink-footed goose, turnstone, dark-bellied brent goose, sanderling, dunlin, knot, oystercatcher, bar-tailed godwit, black-tailed godwit, curlew, golden plover, grey plover, ringed plover, lapwing, shelduck, redshank (Criterion 6).</p>
Gibraltar Point Special Protection Area (SPA) <sup>4</sup>	<p>Populations of regularly occurring Annex I bird species<sup>5</sup>: little tern <i>Sterna albifrons</i> (breeding) and bar-tailed godwit <i>Limosa lapponica</i> (non-breeding).</p> <p>Populations of other regularly occurring migratory bird species<sup>6</sup>: sanderling <i>Calidris alba</i> and grey plover <i>Pluvialis squatarola</i>. (Appendix 1 - Figure 9).</p>
The Wash SPA	<p>Populations of regularly occurring Annex I bird species: little tern (breeding), common tern <i>Sterna hirundo</i> (breeding), Bewick's swan <i>Cygnus columbianus bewickii</i> (non-breeding) and bar-tailed godwit <i>Limosa lapponica</i> (non-breeding) (Appendix 1 – Figure 9).</p> <p>Populations of other regularly occurring migratory bird species: pintail <i>Anas acuta</i>, wigeon <i>Anas penelope</i>, gadwall <i>Anas strepera</i>, pink-footed goose <i>Anser brachyrhynchus</i>, turnstone <i>Arenaria interpres</i>, dark-bellied brent goose <i>Branta bernicla bernicla</i>, goldeneye <i>Bucephala clangula</i>, sanderling <i>Calidris alba</i>, dunlin <i>Calidris alpina</i>, knot <i>Calidris canutus</i>, oystercatcher <i>Haematopus ostralegus</i>, black-tailed godwit <i>Limosa limosa islandica</i>, common scoter <i>Melanitta negra</i>, curlew <i>Numenius arquata</i>, grey plover, shelduck <i>Tadorna tadorna</i>, redshank <i>Tringa totanus</i>.</p> <p>An internationally important assemblage of waterfowl (&gt;400,000) of over 19 species.</p>

<sup>4</sup> Designated under the 1979 EC Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive)

<sup>6</sup> As listed in the EC Habitats Directive (92/43/EEC)

Designation	Interest features
Wash and North Norfolk Coast Special Area of Conservation (SAC) <sup>7</sup>	<p>The following Annex I habitats and one Annex II species<sup>8</sup>:</p> <ul style="list-style-type: none"> <li>▪ Large shallow inlets and bays;</li> <li>▪ Sandbanks slightly covered by sea water all the time ;</li> <li>▪ Mudflats and sandflats not covered by seawater at low tide</li> <li>▪ Reefs;</li> <li>▪ Samphire <i>Salicornia</i> and other annuals colonising mud and sand;</li> <li>▪ Atlantic salt meadows <i>Glauco-Puccinellietalia maritimae</i>;</li> <li>▪ Mediterranean and thermo-Atlantic halophilous scrubs <i>Sarcocornetea fruticosi</i>;</li> <li>▪ Coastal lagoons;</li> <li>▪ Common Seal <i>Phoca vitulina</i>; and</li> <li>▪ Otter <i>Lutra lutra</i>.</li> </ul> <p>(Appendix 1 – Figure 9)</p>
Saltfleetby-Theddlethorpe Dunes and Gibraltar Point SAC	<p>A range of Annex I dune habitats:</p> <ul style="list-style-type: none"> <li>▪ Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) ;</li> <li>▪ Fixed dunes with herbaceous vegetation (grey dunes);</li> <li>▪ Dunes with sea buckthorn (<i>Hippophae rhamnoides</i>);</li> <li>▪ Humid dune slacks; and</li> <li>▪ Embryonic shifting dunes (present as a qualifying feature, but not a primary reason for the designation of the site).</li> </ul> <p>(Appendix 1 – Figure 9).</p>
Gibraltar Point Sites of Special Scientific Interest (SSSI) <sup>9</sup>	<p>Situated approximately 4 km south of the extent of proposed works (Appendix 1 - Figure 9). This is a nationally important site due to its sand dunes and other coastal habitats, and associated fauna, notably invertebrates and passage and breeding birds. Gibraltar Point is also of great importance for its coastal geomorphology.</p> <p>Gibraltar Point is designated as a geological SSSI because it is a nationally important site for the study of coastal geomorphology. It contains a wide range of types of coastal accretion on a low, macrotidal coast in a relatively sheltered environment. Key features include offshore tidal sandbanks, a well-developed ridge and runnel<sup>10</sup> foreshore as well as a spit, sand dunes and saltmarsh at various stages of evolution.</p>
The Wash SSSI	<p>The whole area is of exceptional biological interest (Appendix 1 – Figure 9). The intertidal mudflats and saltmarshes represent one of Britain's most important winter feeding areas for waders and wildfowl outside of the breeding season. Enormous numbers of migrant birds, of international significance, are dependant on the rich supply of invertebrate food. The</p>

<sup>7</sup> Designated under the 1992 EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive)

<sup>8</sup> As listed in the EC Habitats Directive (92/43/EEC)

<sup>9</sup> Designated under the Wildlife and Countryside Act 1981 (as amended).

Designation	Interest features
	saltmarsh and shingle communities are of considerable botanical interest and the mature saltmarsh is a valuable bird breeding zone. In addition the Wash is also very important as a breeding ground for Common Seals.
Chapel Point to Wolla Bank SSSI	Extends for 1.5 km along the Lincshore coastline between the car park at Wolla Bank and the coastguard lookout at Chapel Point (Appendix 1 - Figure 6). The area was designated as a geological SSSI for its nationally important geological features. The buried foreshore sequence includes inter-bedded peats, saltmarsh deposits and shelly clays, which represent sedimentation in an intertidal zone. Incorporated within these organic deposits are the remains of flora and fauna present at the time of deposition, providing important palaeo-environmental information on the timing of and conditions during the deposition. These features are of national importance for interpretation of Holocene stratigraphy that is crucial in establishing historic sea level changes. The foreshore deposits associated with the SSSI are temporarily buried beneath beach deposits and are periodically exposed through removal of those sediments over time by wave action.
Saltfleetby-Theddlethorpe Dunes SSSI	As well as the SAC features, this nationally important site includes inter-tidal flats, saltmarsh and freshwater marsh which together support an exceptionally rich flora and fauna (Appendix 1 – Figure 9). There are outstanding assemblages of vascular plants, invertebrates and breeding birds and it is the most north-easterly breeding site in Britain for the natterjack toad <i>Epidalea calamita</i> . The rapid accretion of dunes and saltmarsh make this an important site for research into the processes of coastal development.
Sea Bank Clay Pits SSSI	This SSSI is composed of a series of isolated clay workings of varying size, depth and topography occupying a total of 17 ha between Sutton-on-Sea and Chapel St Leonards (Appendix 1 – Figures 3-6). The pits support uncommon aquatic plant communities' characteristic of the slightly brackish, eutrophic water, in addition to extensive reedbeds and a rich marginal wetland flora. They are known to support a rich aquatic invertebrate fauna, notably beetles, including several nationally scarce species. The pits are owned or leased by Lincolnshire Wildlife Trust and managed as five nature reserves, namely: Sandilands Pit; Huttoft Bank Pit; Wolla Bank Reedbed; Wolla Bank Pit; and Chapel Pit.
Gibraltar Point National Nature Reserves (NNR) <sup>11</sup>	As well as the SAC, SPA and Ramsar site features, this is also of great importance for its coastal geomorphology (Appendix 1 – Figure 9).

<sup>11</sup> Designated under the Wildlife and Countryside Act 1981 (as amended).



Designation	Interest features
Huttoft Bank Submerged Forest Regionally Important Geological Sites (RIGS) <sup>12</sup>	The geological interest is the exposure of peat and submerged forest dated to between 5000 and 2000 before present. The exposure was visible from time to time in southward tending runnels on the foreshore, prior to nourishment in 1996. (Appendix 1 - Figure 4).
Sutton-on-Sea Foreshore RIGS and Wolla Bank Foreshore RIGS	Two separate sites whose geological interest is in the exposure of peat and submerged forest on the foreshore time dated to between 5000 and 2000 before present. Devensian boulder clay and associated erratics indicate the origin/line of travel of glacial ice. Sutton-on-Sea Foreshore RIGS is shown on (Appendix 1 - Figure 3) Wolla Bank Foreshore RIGS is shown on (Appendix 1 - Figure 6).

### 2.3.3.3 Non-statutory Nature Conservation Designations

Table 2 lists Non-statutory nature conservation sites located within the 'study area' or its potential zone of influence.

Table 2 - Non-statutory nature conservation designated sites along the Lincshore coast, and their main interest features.

Ecological designation	Interest features
Anderby Creek Site of Nature Conservation Importance (SNCI) <sup>13</sup>	A sand dune systems and a series of flooded clay pits which have developed into extensive areas of reedbed (Appendix 1 – Figure 5).
Huttoft Bank Dunes SNCI	Supports a number of rare and important plant species and an assemblage of calcareous grassland species of county importance (Appendix 1 – Figure 4).

### 2.3.3.4 Biodiversity Action Plan (BAP) habitats and species

The UK BAP contains a set of action plans for a number of habitats and species that require conservation action. Priority BAP habitats that have been recognised and mapped<sup>14</sup> along the 'study area' are:

- Mudflat
- Coastal sand dunes
- Purple moor grass and rush pasture

The Lincolnshire BAP<sup>15</sup> contains a set of local BAP action plans for a number of habitats and species that require local conservation action, of which the following are listed in the category of coastal and marine:

<sup>12</sup> RIGS are designated for geological features of regional interest and are identified by the planning authority and the Lincolnshire Wildlife Trust. These sites have no formal legal protection.

<sup>13</sup> SNCI are designated for nature conservation of local interest and are identified by the Lincolnshire Wildlife Trust. SNCIs are the equivalent of County Wildlife sites (CWS) and have no formal legal protection.

<sup>14</sup> Natural England 2007 *Nature on the Map*. <http://www.natureonthemap.org.uk> (14/04/09)

<sup>15</sup> Lincolnshire Biodiversity Partnership 2006 *Lincolnshire Biodiversity Action Plan* [http://www.lincs-biodiversity.org.uk/bap\\_candm.php](http://www.lincs-biodiversity.org.uk/bap_candm.php) (15/04/09)

- Coastal sand dunes
- Saline lagoons
- Saltmarsh
- Natterjack toad

Particular consideration will be given to any impact of the works on these habitats and species where present, as well as to opportunities for BAP habitat restoration or creation in the overall design of the scheme.

### 2.3.3.5 Coastal Terrestrial Ecology

Much of the coastal fringe along the extent of proposed works consists of a narrow and relatively low length of coastal sand dunes. The dominant vegetation is scrub, predominantly the nationally scarce sea buckthorn *Hippophae rhamnoides*, with frequent elder *Sambucus nigra*, interspersed with small patches of heavily rabbit-grazed dune grassland close to the shoreline. Sea buckthorn scrub is used extensively by migrating birds such as warblers and winter thrushes for food and shelter, and provides an important breeding habitat for birds such as whitethroat *Sylvia communis*. Open sand dune habitats are limited in extent, although, where dune vegetation does occur on open sand dunes, it consists predominantly of primary colonisers and some rare species. There are no dune slacks, although a number of wetlands and reedbeds are located in the clay pits excavated to supply material for of the coastal defences in 1953 (Southey and Smith, 1989).

Some areas of dune scrub vegetation have undergone successional change to form small patches of woodland, dominated by sycamore *Acer pseudoplatanus*. Some areas of planted woodland are also located close to the coast, for example between Moggs Eye and Anderby Creek.

### 2.3.3.6 Intertidal and sub-tidal ecology

This stretch of coastline is also regularly used in winter by feeding shorebirds (or waders) such as sanderling, bar-tailed godwit, redshank and ringed plover. Monitoring of overwintering bird populations along the coast from Theddlethorpe to Gibraltar Point was undertaken between 1996 and 1999. The 1996-2008 environmental monitoring (Sections 2.2.1.5 and 2.3.3.1) concluded that the area south of the extent of proposed works between Skegness and Gibraltar Point supported the largest populations of overwintering birds, due to lower levels of disturbance and a more abundant food source (Environment Agency, 2009b). Surface-feeding species such as sanderling and ringed plover exhibited the broadest distributions throughout the 'study area', while other species such as brent goose, knot and shelduck were restricted to Gibraltar Point. No changes in the distribution and abundance of sanderling and ringed plover were recorded immediately following nourishment in 1997/1998. Monitoring of foraging shorebirds undertaken for the first few years of beach nourishment, but was discontinued as the data did not demonstrate any impact from the nourishment operations on the bird populations (Environment Agency 2008a).

### 2.3.3.7 Fish and fisheries

The principal fishing activities within the 'study area' were identified from the Eastern Sea Fisheries Joint Committee (ESFJC) statistics on reported fishing activity between Donna Nook and Skegness from 1983 to 2008. Fishing activities along the coastline vary seasonally according to the seasonal migration patterns and the abundance of the target species, and the principal fishing activities are detailed in Table 3.

Table 3 - Principal Fishing Activity on the Lincshire Coast



Method	Target Species	Timing
Long-lining, Gill-netting, Trawling	Cod <i>Gadus morhua</i>	Winter
Long-lining, Gill-netting, Trawling	Skate <i>Raja</i> sp. Whiting <i>Merlangius merlangus</i> Roker <i>Raja</i> sp. Sole <i>Solea solea</i>	Spring/ Summer
Potting	Edible crab <i>Cancer pagurus</i> Lobster <i>Homarus gammarus</i>	Summer
Beam trawling	Brown shrimp <i>Crangon crangon</i> Pink shrimp <i>Pandalus montagui</i>	All year round but activity peaks in Autumn
Dredging	Mussel <i>Mytilus edulis</i>	All year round

The Wash also contains significant populations of the American razor *Ensis directus*, which has the potential to support a commercial fishery.

Fisheries data from the ESFJC Annual reports is given in Appendix 7 – Table 13, and illustrates the relationship between Shrimp, Mussel and Cockles landing in the Wash between 1983 and 2008 against nourishment volumes.

Offshore in the sublittoral zone there are ephemeral mussel beds, the location of which varies from year to year and which are often not present or recorded at all.

There are five access points for beach-launched fishing along the Lincshire coastline, and only two of these, North Shore Road in Skegness and Huttoft, are unrestricted. The town council controls the access point at Mablethorpe, the parish council controls the access point at Chapel St Leonards. The access point at Anderby creek is controlled by East Lindsey District council, and can be hazardous during the holiday season when the beach is crowded. We

To the south of the 'study area', the Wash is an important spawning ground and nursery for a variety of fish species, including plaice, sole and cod, and many of the juveniles will eventually populate other areas around the UK coast. It also supports a shellfishery of national importance for mussels and cockles *Cerastoderma edule* along with some cultivation of pacific oysters *Crassostrea gigas*. The Wash also supports nationally important fisheries for pink and brown shrimp. The pink shrimp fishery has operated on a very small scale since the 1970s, with only two vessels pursuing this species on a part time basis.

The importance of the Lincolnshire coast for shrimps, in comparison to the Wash, depends on the annual distribution of stocks. Consequently, each year fishing efforts may be concentrated off the Lincolnshire coast and not in the Wash or vice versa. Shrimping vessels from Boston and King's Lynn intermittently trawl up and down the coast for brown shrimp. The shrimp are harvested all year round, but there is usually a peak in autumn and a concentration of effort at this time. The state of the fishery depends on the recruitment of postlarval shrimps between May to June, and the UK shrimp fishery is therefore extremely variable. It is considered that the various cycles in landings are most likely to be natural fluctuations caused by the dynamics of this short-lived species (CEFAS, 2001).

Annual monitoring of the nearshore population of brown shrimp (as described in Section 2.2.1.5 and 2.3.3.7) has indicated no significant differences between nourished and reference sites (north and south of the extent of proposed works). In addition to this,

CEFAS monitor nearshore populations of brown shrimp along the Lincolnshire coastline on behalf of the Environment Agency.

CEFAS also monitor shrimp populations at the licensed dredging site from where the material for beach nourishment is obtained. The results of this monitoring has not provided any evidence to indicate that dredging has influenced shrimp catch rates in the fishery as a whole, and suggests that other factors, such as whiting abundance and the level of fishing effort in the previous season, may significantly influence shrimp abundance (CEFAS, 2003).

## 2.3.4 Population, Economy and Recreation

The main towns along the Lincshire coast are Mablethorpe and Skegness, with smaller settlements between. The following provides a brief summary of the local communities along the coast within the 'study area'.

- Mablethorpe at the northern end of the 'extent of proposed works' has developed as a major tourist resort. The busy town centre provides for the local and the tourist communities. The Haven Holiday Centre and the Trustville Holiday Centre respectively border the north and south of Mablethorpe. These consist of holiday chalets and static caravans with access to the beach. An amusement park is located along Central Promenade. The proximity of these facilities to the sea is considered an important element in maintaining the resort's attractiveness (East Lindsey District Council, 1999).
- Trusthorpe, situated between Mablethorpe and Sutton-on-Sea, has developed predominantly around Seacroft Holiday Estate and Greenfield Caravan Park. Residential development within Trusthorpe is situated along the A52.
- Sutton-on-Sea has developed as a retirement centre providing a more sedate and quiet holiday environment. Beach chalets line the seawall backed by the Sutton Pleasure Garden.
- Sandilands is a small linear village along the A52. The predominant feature is the golf course situated immediately to the rear of the coastal defences.
- Chapel St Leonards is a popular retirement settlement and tourist resort catering for holidays of a quieter nature than Skegness. The promontory of Chapel Point marks the northern end of the town and the small town centre is situated immediately to the rear of the seawall. Open countryside abuts the north and south of the village.
- Ingoldmells is a busy holiday resort to the south of the at the southern end of the 'extent of proposed works'. The main feature is Fantasy Island with its fairground and amusement arcades, but there are also numerous holiday parks consisting of static caravans. Sea Lane fulfils the role of a 'promenade' because coastal conditions and the presence of the coastal defences at this location make it difficult to have seafront facilities (East Lindsey District Council, 1999). Butlin's holiday village and Funcoast World occupies the seafront between the two key tourist resorts of Ingoldmells and Skegness.
- Skegness is a more typically traditional seaside resort than Ingoldmells. The northern end of the seafront is commercialised with a funfair and pier while the southern end, south of the clock tower, comprises manicured gardens with a boating lake and crazy golf course.

There are 18,386 properties (16,607 residential and 1,779 commercial) considered to be at risk in a Do Nothing scenario from a 0.5% (1 in 200 year) event based on predicted 2110 water levels. Each caravan park is considered as a single commercial property.

Other assets within the 'study area' include public houses, hotels, car parks, amusement parks, and a nature reserve. The Lincolnshire Wildlife Trust has established a visitor centre at Gibraltar Point, approximately 8 miles south of the extent of proposed works. To the south of the extent of proposed works at Skegness are the Natureland Seal Sanctuary, Skegness Pier, and two golf courses.

There are footpaths and promenades along the sea front at Mablethorpe, Trusthorpe, Sutton-on-sea, and from Vickers Point extending north to Chapel St Leonard. To the south of the extent of works there is a promenade, known as Lagoon Walk, along the seafront at Skegness.

The wide beach at Mablethorpe provides a range of facilities for beach users with donkey rides, a funfair and beachfront cafes. Recreational boating is typically limited to the high tourist season (June to August) and is centred on Skegness and Mablethorpe.

The local economy is sustained primarily by tourism, but agriculture, fisheries and service industries also contribute to the Lincolnshire economy. Significant investment in tourism has taken place along the coast between Ingoldmells and Skegness including the development of Butlin's Funcoast World, the largest single employer along the coast, and the Fantasy Island complex.



**Photo 4 – Promenade adjacent to the beach to the south of Trusthorpe, near the Sandilands Golf Course**

The Mablethorpe Royal National Lifeboat Institute (RNLI) has an access off Central Promenade onto the main beach in Mablethorpe which is used by the inshore rescue boat throughout the year, and particularly during the summer period. The main RNLI lifeboat station is situated near the clock tower in Skegness and the coastguard station is situated at Seathorne.

Consultation with the Environment Agency Planning team has highlighted that there is currently a study reviewing the long-term sustainability of the coastal settlements. The study is expected to be published in spring 2010 and will be used to inform a review of the Regional Spatial Strategy for the East Midlands. The study outputs will be an important consideration for the Lincshire project. The potential constraints and opportunities arising from the East Midlands Regional Spatial Strategy will be considered at the next strategy review.

### 2.3.5 Services and Material Assets

There are no known gas, electricity or water services within the perimeters of the 'extent of proposed works'.

There is a sewage treatment outfall at Ingoldmells point, and several land drainage outfalls along the extent of proposed works (Appendix 1 -Figures 2- 8). Nourishment operations at the locations of outfalls along the extent of proposed works will taper the beach profile from a distance of 100-150m from the outfall, with no nourishment within 50m of the outfall structure. Known outfall locations are shown in Appendix 1 – Figures 2 to 8. No damage to the outfall structures is anticipated as a result of the clearance being provided.

There is an existing wind farm off the Lincolnshire coast at Chapel St Leonards, the cables from this wind farm connect with the land at 'profile sections' number 93 approximately 500m north of Skegness, outside the 'extent of proposed works'. New wind farms are proposed for the Lincolnshire coast between Chapel St Leonards and Mablethorpe. The new wind farms are considered in Section 2.3.14.

### 2.3.6 Air and Climate

There are no Air Quality Management Areas (AQMAs) within the Lincshire coastal defence 'study area' (UK National Air Quality Archive, 2009).

Defra has indicated that climate change is likely to result in an increase in frequency and severity of storm events. The proposed nourishment works would sustain the standard of flood defences along the Lincolnshire coast by reducing the extent of wave overtopping caused by storm events, protecting the seawall and the rear sand dunes from damage.

### 2.3.7 Noise and Vibration

Background noise levels vary considerably along the coastal frontage. The coastal strip between Sandilands village and Chapel St Leonards is sparsely settled and the dominant noise is the sound of waves breaking on the beach. However, noise levels in the more densely populated tourist areas vary seasonally and, during the quiet winter months, the background noise levels resemble the quieter areas of the coastline.

There have not been any complaints about operational noise and vibration during previous nourishment works and therefore this is not anticipated to be an issue during future works.

### 2.3.8 Landscape Character

The 'study area' is classified as lying within the Lincolnshire Coast and Marshes Character Area, a flat coastal plain bounded by the mouth of the Humber Estuary and the North Sea. The 'study area' is characterised for its extensive shallow beach.

Artificial sea defences between Mablethorpe and Skegness are a significant feature of the coastline.

The area of proposed works has a strong sense of geographical isolation, with localised concentrations of development. The open stretches of beach between the main resorts of Mablethorpe and Skegness are peaceful and uncluttered, backed by relict dunes or man made structures (e.g. seawalls and chalets), which are significant features.

### 2.3.9 Land Use and Urban Regeneration

The low-lying land to the rear of the coastal frontage between Mablethorpe and Skegness is predominantly rural in nature, with most of the land being in agricultural production,

either arable or livestock. This land is predominantly classified as Grade 3 under the Agricultural Land Classification system, agricultural land of good to moderate quality, with a very small percentage classified at Grade 2, which is agricultural land of good quality. Of particular note is the presence of Grade 3 arable land situated directly behind the coastal defences at Moggs Eye, as this land would be subject to water-logging and saline inundation, affecting plant growth, if it was not protected from the sea.

The proposed works will prevent coastal flooding and therefore protect the land use of the hinterland.

Nourishment operations will be undertaken in sections for each recharge location, and therefore will only occupy short sections of beach on a temporary basis.

### 2.3.10 Bathing Water Quality

Table 4 provides the bathing water quality results at the monitoring locations along the Lincolnshire coast (Appendix 1 – Figures 2-8) for the period 2004-2008, in line with the Bathing Water Directives (76/160/EEC). Table 5 defines the water quality grades used in Table 4.

Based on the previous campaign of works, it is envisaged that the nourishment material will be mixed with sea water into a slurry so that it can be pumped onto the beach. The water element of the slurry will flow back into the sea. The management of water quality issues will be reviewed and addressed during the next stage of the environmental assessment.

Table 4 - Bathing Water Quality at the seven Bathing Waters along the Lincshore coast for the period 2004 - 2008.

Lincshore Bathing Water Monitoring Location	2004	2005	2006	2007	2008
Mablethorpe	Excellent	Excellent	Excellent	Excellent	Excellent
Sutton on Sea	Excellent	Excellent	Excellent	Excellent	Excellent
Moggs Eye	Excellent	Excellent	Excellent	Excellent	Excellent
Anderby	Excellent	Excellent	Excellent	Excellent	Excellent
Chapel St Leonards	Excellent	Excellent	Excellent	Excellent	Excellent
Ingoldmells south	Excellent	Excellent	Good	Good	Excellent
Skegness	Excellent	Good	Excellent	Excellent	Excellent

(Source: Environment Agency. 2009a)

Table 5 - Bathing Water Directive Grades

Grade	Definition
Excellent	Water quality meets strict guideline standards of the Bathing Water Directive
Good	Water quality meets the mandatory standards of the Bathing Water Directive
Poor	Water quality did not meet the required standard of the Bathing Water Directive



Grade	Definition
Closed	The bathing water was closed during the bathing season.

### 2.3.11 Cultural Heritage and Historic Environment

Surveys of the archaeology and heritage of the Lincshire area have been undertaken since the strategy began. The results of these surveys are given in Appendix 4 and summarised below.

#### *Cultural Heritage Afforded Protection by the Coastal Defences*

There are no Scheduled Ancient Monuments (SAM), Conservation Areas or Heritage Coast designations along the 'study area'. There are a number of SAMs further inland (outside of the 'study area') which are afforded protection by the coastal defences.

There are 335 National Monument Records (NMR) within the 'study area' (Appendix 4).

#### *Cultural Heritage along the shoreline*

The Lincolnshire County Sites and Monuments Record (SMR) indicted the presence of 77 finds and sites within the intertidal zone of the Wash. No SMR were recorded between Mablethorpe North End and Skegness Pier.

The NMRs which fall within the 'study area' are illustrated on Appendix 1 – Figures 2 -8.

In addition, there are 46 wreck sites in the area, as designated by the 1973 Protection of Wrecks Act (Appendix 4).

Archaeological remains on the coast are particularly vulnerable to damage, as many are situated in the intertidal zone. Recent work along the English coastline has suggested that many remains of archaeological significance are, as of yet, undiscovered and unrecorded. The proposed works will protect archaeological remain by covering them in a deeper layer of sand and reducing the likelihood of exposure.

### 2.3.12 Traffic and Transport

The major routes to the Lincshire coastline from South Yorkshire and the East Midlands are the A158 Lincoln to Skegness, A16 Stamford to Grimsby and the A1031 Grimsby to Mablethorpe.

The main coast road is the A52 (Boston to Mablethorpe) which links to the A16 at Boston and runs from Skegness through Ingoldmells, Chapel St Leonards and Mablethorpe.

Lincolnshire County Council (LCC) traffic data collected in July 1999 for the A52 near to Chapel St Leonards recorded a 12 hr (7:00-19:00) weekday flow of 7926 vehicles, 1.5% of which comprised HGV traffic. Between Sandilands (village) and Chapel St Leonard Roman Bank, Sea Road, Sandy Lane and access tracks (Appendix 1 – 3 to 6) provide access to the beaches. The same LCC traffic data recorded a 12 hr weekday flow of 2920 vehicles travelling between Chapel St Leonard and the A52, equivalent to use of the Sea Bank road, again 1.5% of this flow comprised HGV traffic.

There are several car parks along the coastal frontage (Appendix 1 – Figures 2-8) and many of these are accessed from the Sea Bank road. Huttoft Car Terrace allows drivers to park facing onto the beach.

There are a number of Public Rights of Way (PRoW) along the 'study area' (Appendix 1 – Figures 2-8) providing access to the beach. A PRoW runs along the rear of the seawall

from Chapel St Leonards to Vickers Point. The remainder of the coastal defences can be walked along and, between Mablethorpe and Sutton-on-Sea, a promenade cycle route has been established. Once on the beach, the construction vehicles will stay within the 'working area' for the duration of the works. On completion of works the construction vehicles will move off the beach either to the site compound or leave the project. Therefore the proposed works are not anticipated to affect the PRoW.

### 2.3.13 Resource Efficiency and Waste

Beach nourishment is a long-term commitment with regular inputs of sea dredged sediment being required to maintain the standard of defence to counteract ongoing sediment losses. The material required for beach nourishment is currently obtained from licensed dredging sources. These sites are covered under a separate environmental assessment as described in Section 2.1. Under the existing system the decision as to the sustainability of a resource is made at a higher level than this EIA.

Demand for marine aggregate in England and Wales has been estimated at approximately 20-24 million tonnes per annum (DETR, 2001). Of this, approximately 50% goes to the construction industry, 20% to beach nourishment schemes and the remaining 30% is exported. Within existing licensed areas there are resources of 300 million tonnes along with a further estimated 300 million tonnes of reserves in prospective areas (PDE, 2001).

The removal of timber groynes will generate boards and piles that will require disposal. These will be offered to the Lincolnshire Wildlife Trust for use in nature reserve management at Gibraltar Point. Any surplus timber groyne will be sold for use as recycled timber. Steel bolts and other steel connections removed from the groynes will be recycled for scrap as far as possible. Any remnant material will be disposed of at an appropriate landfill.

### 2.3.14 Cumulative Effects

Cumulative effects result from the in-combination effects of the proposed works with other projects occurring within the same geographic area and time frame. The impacts resulting from a single scheme may not be significant on their own but when combined with other impacts, these could become significant.

Projects identified during the scoping process which have the potential for in-combination effect are:

- The proposals for a new pier to be built at Ingoldmells affecting coastal processes;
- The installation of proposed new wind farms along the Lincolnshire coast affecting coastal processes;
- The land connection from proposed new offshore wind farms conflicting with nourishment operations;
- The affect of the existing wind farm (Section 2.3.5) on coastal processes; and
- The presents of hard defences around Lagoon Walk (Section 2.3.4), to the south of Skegness, affecting coastal processes which impact on the nature reserve at Gibraltar Point.

## 2.4. Further Work

Further investigations will need to be undertaken as part of the EIA process. These are:

- Re-evaluate environmental monitoring in light of the consultation process which identified a requirement to review the methodology for future environmental monitoring of epibenthic populations (Section 6.3) in discussion with representatives of the fisheries industry. This will be documented as part of the Environmental Statement;
- Identify the location and extent of new proposed new wind farms along the Lincolnshire coast (Section 2.3.14); and
- Discuss consent requirements with the Environment Agency Development and Flood Risk team (Appendix 5).

## 2.5. EIA Methodology

### 2.5.1 The Scoping Process

The scoping stage of the Environmental Impact Assessment (EIA) process is undertaken primarily to: highlight issues likely to result from implementation of the preferred option that may result in potentially significant impacts and therefore require further assessment; and, identify the issues which are unlikely to result in a significant impact and therefore do not require further assessment.

The scoping process for this project has been undertaken using professional judgement, discussions with Environment Agency internal specialists and consultation with statutory organisations and interested parties. The process is based on our understanding of the baseline environmental conditions (Section 2.3) and our proposed works (Section 2.2.1). The results of the assessment are detailed in Section 3.3 and consultation in Section 6.2.

A Scoping Consultation Document (SCD) was produced to document baseline environmental conditions, the results of completed relevant site surveys, potential issues, constraints and opportunities, and specific recommendations for the EIA process. The SCD was issued to key stakeholders (Chapter 6) for their comment.

The SCD has been updated into a Scoping Report to record the comments received and to detail the actions taken to address them. This Scoping Report will be re-issued to relevant consultees to advise them of issues identified for further consideration in the environmental assessment process.

### 2.5.2 Impact Assessment Process

Once the key topics and issues have been identified through the scoping process, they will be considered in detail as part of the Environmental Impact Assessment (EIA) process. The results of the EIA will be reported in an Environment Statement (ES) in accordance with EIA Directive (EC (EIA) Directive 85/337/EEC) and the Environment Agency 'Agency Management System' (AMS) Environmental Impact Assessment Guidance.

The assessment process considers the likely impacts of the proposed works on the key issues. Impacts will be assessed first prior to the implementation of any mitigation; and then again, taking into account implementation of mitigation measures prior to, during and/or post construction.

The following five stage framework approach will be used to predict significant environmental effects, incorporating industry-accepted impact assessment methodologies where available.



*Stage 1: Determine the value/sensitivity of the receptor/environmental resource*

- List receptors (e.g. people) and environmental resources (e.g. elements of the existing natural or built environment), within a defined 'study area'.
- Assess the value or the sensitivity of each receptor/environmental resource according to a five-point scale (i.e. very high, high, medium, low, and negligible). Criteria defining these values will differ with respect to each topic area.

*Stage 2: Determine the magnitude and characteristics of impacts*

- Identify the known or likely impacts (e.g. physical changes) of the works on receptors or environmental resources at the pre-construction, construction and post construction/operational phases, relative to the baseline levels.
- Describe the nature (negative or positive) and characteristics (i.e. whether direct or indirect, secondary, cumulative, short or long-term, permanent or temporary, reversible or irreversible) of these impacts.
- Consider the characteristics of each impact to determine its magnitude. Classify the magnitude of the impacts as negligible, minor, moderate or major; and positive or negative. Criteria defining the magnitude of impacts will differ with respect to each topic area.

*Stage 3: Determine the significance of the effect*

Evaluate the significance of the environmental effect based on the value or sensitivity of the receptor and/or environmental resource and the magnitude / characteristics of the impact using the criteria in Table 6.

Table 6 - Matrix for evaluating the significance of environmental effects

<b>Magnitude / Characteristics of impact</b>	<b>Value/Sensitivity</b>		
	<b>High</b>	<b>Medium</b>	<b>Low</b>
Major negative	Major adverse	Moderate adverse	Minor adverse
Moderate negative	Moderate adverse	Moderate adverse	Minor adverse
Minor negative	Minor adverse	Minor adverse	Minor adverse
Negligible	Negligible		
Minor positive	Minor beneficial	Minor beneficial	Minor beneficial
Moderate positive	Moderate beneficial	Moderate beneficial	Minor beneficial
Major positive	Major beneficial	Moderate beneficial	Minor beneficial

*Stage 4: Identify mitigation measures*

Where significant adverse effects are predicted, recommend measures to avoid, mitigate or remedy, which could include compensation, those effects that will be put in place.

### *Stage 5: Determine the significance of residual effects*

After implementing mitigation measures any residual impacts will be reclassified using the same criteria. Any residual impacts that are found to have a major adverse impact will need to be remediated to reduce the residual impact to at least moderate adverse.

## **2.6. Legislative and Regulatory Requirements**

Following an internal Environment Agency screening exercise it has been determined that the works are likely to give rise to significant environmental effects, and will therefore require a statutory EIA (EC (EIA) Directive 85/337/EEC as amended by Directive 97/11/EC). Works are being undertaken under our permitted development powers as of the Town and Country Planning (General Permitted Development) Order (1995) SI95/418 Schedule 2 part 15. As improvement works which benefit from our permitted development powers these works fall under The Environmental Impact Assessment (Land Drainage Improvement Works) (Amended) Regulations 2005 (SI99/1783) (amended) (SI2005/1399) and (SI2006/618).

Natural England has been consulted to ensure the appropriate information is submitted to meet the assessment obligations of The Conservation (Natural Habitats, &c.) Regulations 1994 (EC Habitats Directive (92/43/EEC)).

## **2.7. Objectives**

### **2.7.1 Lincolnshire Shoreline Management Plan objectives**

The objective of the Lincolnshire SMP is to 'hold the existing defence line' for the Lincshire coastline.

### **2.7.2 Lincshire Coastal Defences Strategy Objectives**

The overall aim of the Lincshire Coastal Defences Strategy (Section 2.2) is:

- To reduce the risk to life and property from the risk of sea flooding. This involves the consideration of protection against direct flooding along the frontage.
- To minimise the adverse impacts on the natural environment of the area and to maximise opportunities for environmental enhancement. This includes protection to sites of archaeological and geological interest within the clay strata underlying the sandy beaches.
- To ensure the continuation of the sediment supply to the downdrift beaches. This will minimise the impact on downdrift beaches and, in particular to Gibraltar Point, which is home to a number of protected species.
- To maintain, as far as is possible, the high amenity, social and recreational value of the area. This will preserve the tourism and recreational value of beaches.
- To take into account the safety of those involved either with construction or who subsequently rely on, or are exposed to, the completed scheme.

### **2.7.3 Project Objectives**

The project objectives reflect the Lincshire Coastal Defences Strategy objectives (Section 2.7.2).

# 3 Alternatives

## 3.1. Strategic Context

### 3.1.1 Shoreline Management Plan

The Lincolnshire SMP (Posford Duvivier, 1996) considered the following approaches to shoreline management:

- Do nothing;
- Retreat the existing defence line landward;
- Advance the existing defence line seaward; and
- Hold the existing defence line.

As described in Section 2.2 the SMP set a 'hold the line' policy for the Lincshire coastline. The Lincolnshire SMP is currently being updated and incorporated into the Flamborough Head to Gibraltar Point SMP by the Humber Estuary Coastal Authorities Group<sup>16</sup> (HECAG) with a completion target of March 2010. The working assumption for this document is that the present policy of hold the line will continue over at least the short term (0 to 20 years SMP epoch).

## 3.2. Options

### 3.2.1 Lincshire Coastal Defences Strategy Options

The Lincshire Coastal Defences Strategy Review (Environment Agency, 2004a) assessed six options for technical viability, environmental impacts and economic suitability to achieve the 'hold the line' policy.

These included:

- Do nothing;
- Maintain seawalls;
- Improve seawalls;
- Beach nourishment;
- Beach nourishment with rock reefs and groynes; and
- Beach nourishment with rock groynes.

As part of the performance review (Environment Agency, 2008c) all six options were reappraised to ascertain if the beach nourishment was still the most viable solution.

### 3.2.2 Preferred Option

The preferred option recommended by the performance review is to provide beach nourishment to sustain a 0.5% annual probability of flooding (1 in 200 year return period) against coastal flooding.

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<sup>16</sup> East Riding of Yorkshire Council; East Lindsey District Council; North East Lincolnshire Council; Lincolnshire County Council; the Environment Agency and Natural England

### **3.3. Key Issues**

This scoping process has identified several potentially significant issues requiring further consideration. Table 7 details the baseline topics discussed in Section 2.3 and provides a justification for scoping of key issues.

The key issues 'scoped in' to the assessment process will be investigated further through the next stage of the EIA. Those issues which have been 'scoped out' will not require further consideration, although appropriate management will be required during operation of the proposed scheme to minimise any potential impacts.

The main positive benefit of the scheme, which provides the socio-economic justification for the major expenditure involved, will be the protection and maintenance of the existing line of defence. This will manage the coastal flood risks to over 18,386 properties, 35,000ha of land and areas of ecological interest that would otherwise be at risk of permanent loss by encroachment of the sea under a do-nothing policy. There is also a positive benefit to the community from the provision and maintenance of a beach.

Table 7 - Key topics and scoping conclusions

Baseline Topic	Scoping Decision (In or Out)	Scoping Conclusions
Soil, Geology and Hydrogeology	Scoped In	<ul style="list-style-type: none"> <li>▪ Potential for damage or disturbance to designated sites (geological SSSIs and RIGS). The clay geology is exposed by the longshore movement of sediment along the coast. Where the clay becomes exposed it is vulnerable to erosion which removes the foundation of the beach.</li> </ul>
Coastal Processes	Scoped In	<ul style="list-style-type: none"> <li>▪ Continue discussion arising from the scoping consultation regarding coastal geomorphology at Gibraltar Point.</li> </ul>
Biodiversity and Fisheries	Scoped In	<ul style="list-style-type: none"> <li>▪ Potential for damage or disturbance to designated sites (i.e. Chapel Point to Wolla Bank SSSI, Anderby Creek SNCI and Huttoft Bank Dunes SNCI) and BAP species and habitats (particularly dunes and mudflats) within the extent of proposed works,</li> <li>▪ Potential for damage or disturbance to ecological features (i.e. Gibraltar Point SPA/ SAC/ NNR/ SSSI/ Ramsar site and the Wash SSSI/ SPA/ Ramsar site and the Wash and North Norfolk Coast SAC) within the zone of potential influence of the works, resulting from longshore transport of sand.</li> <li>▪ Potential effects on the intertidal and sublittoral invertebrate and fish communities of the nourishment sites as a result of suffocation and burying.</li> </ul>
Population, Economy and Employment	Scoped In	<ul style="list-style-type: none"> <li>▪ Disturbance to beach users.</li> </ul>
Services and Material Assets	Scoped Out	<ul style="list-style-type: none"> <li>▪ There are no known gas, electricity or water services within the perimeters of the extent of proposed works.</li> <li>▪ Nourishment operations will not be undertaken within 50m of an outfall structure.</li> </ul>
Air and Climate	Scoped Out	<ul style="list-style-type: none"> <li>▪ The proposed works will not impact on air quality.</li> <li>▪ The proposed nourishment works would sustain the standard of flood defences.</li> </ul>
Noise and Vibration	Scoped Out	<ul style="list-style-type: none"> <li>▪ There have not been any complaints about operational noise and vibration during previous</li> </ul>

Baseline Topic	Scoping Decision (In or Out)	Scoping Conclusions
		<p>nourishment works and therefore this is not anticipated to be an issue during future works.</p>
Landscape Character	Scoped In	<ul style="list-style-type: none"> <li>▪ Temporary impact on landscape character from the presence of nourishment operations.</li> </ul>
Land Use and Urban Regeneration	Scoped Out	<ul style="list-style-type: none"> <li>▪ The proposed works will prevent coastal flooding and therefore protect the land use of the hinterland.</li> <li>▪ Nourishment operations will be undertaken in sections for each recharge location, and therefore will only occupy short sections of beach on a temporary basis.</li> <li>▪ Potential of pollution from spills during nourishment operations.</li> </ul>
Bathing Water Quality	Scoped In	<ul style="list-style-type: none"> <li>▪ Potential for archaeological sites and finds to be revealed/damaged during excavation or other works on the shore.</li> </ul>
Cultural Heritage and Historic Environment	Scoped In	<ul style="list-style-type: none"> <li>▪ The proposed works are not anticipated to cause disruption to local traffic or public rights of way.</li> </ul>
Traffic and Transport	Scoped Out	<ul style="list-style-type: none"> <li>▪ This report does not include an environmental assessment of the sites used to source dredged material. Under the existing system the decision as to the sustainability of a resource is made at a higher level than this EIA.</li> </ul>
Resource Efficiency	Scoped Out	<ul style="list-style-type: none"> <li>▪ The proposals for a new pier to be built at Ingoldmells affecting coastal processes.</li> <li>▪ The installation of new wind farms along the Lincolnshire coast affecting coastal processes.</li> <li>▪ The land connection from new offshore wind farms conflicting with nourishment operations.</li> <li>▪ The affect of the existing wind farm of coastal processes.</li> <li>▪ The presents of hard defences around Lagoon Walk, to the south of Skegness, affecting coastal processes which impact on the nature reserve at Gibraltar Point.</li> </ul>
Cumulative Effects	Scoped In	

# 4 Opportunities

Consultation with Lincolnshire Wildlife Trust (LWT) has raised the series of opportunities for enhancements.

- Improvements to northern area of the Gibraltar Point SSSI, to achieve favourable or unfavourable recovering status through improved beach morphology, vegetation management and visitor interpretation.
- Prepare a 'Lincolnshire Marine Biodiversity Report' to develop a knowledge base for the marine habitats off the Lincolnshire coast which will inform the Lincolnshire Biodiversity Partnership's developing Habitat and Species Action Plans for Lincolnshire's marine environment and enable interpretation of the results to the general public at Gibraltar Point Visitor Centre.
- Acquire land at Huttoft to provide short and long term BAP habitat creation. This opportunity is on land adjacent to an existing SSSI, which is owned by the Environment Agency and leased to LWT to manage as a nature reserve. This enhancement could bring 30 acres of SSSI land in to favourable condition, safeguarding the condition of the Huttoft Bank Pit SSSI and enabling rapid establishment of coastal grazing marsh (UK & Lincolnshire priority BAP habitat, within the Lincolnshire Coastal Grazing Marsh Partnership target area for habitat conservation, restoration and re-creation). In the medium term, the land would provide a clay source for future sea defence improvements with that work producing reedbed (another UK & Lincolnshire BAP priority habitat) which would significantly increase the area of habitat suitable for Bitterns and Marsh Harriers continue to breed at Huttoft Pit. This enhancement would provide additional habitat for water voles and otters BAP species.
- BAP Habitat Creation at Anderby Creek to enhance the recently established nature reserve by creating reedbed (UK & Lincolnshire BAP priority habitat) and open water habitats while achieving dune protection (also UK & Lincolnshire BAP priority habitat).
- Provision of little tern habitat, in combination with the Donna Nook Managed Realignment Project, through the provision of beach material from the nourishment works to LWT.

The project team for the 2005-2009 nourishment works has suggested the opportunity, based on beach nourishment works in the Netherlands, for stabilisation of the beach using seeding for vegetation.

The above opportunities will be investigated further during the environmental assessment process, and discussed with appropriate stakeholders, to determine which options will be progressed.

Consultation with Lincolnshire County Council has raised the opportunity for habitat creation associated with the proposed Lincolnshire Coastal Country Park Project. The proposed park is earmarked for an area between Sandilands and Chapel St. Leonards, covering approximately eight kilometres of coastline and up to 35 square kilometres of coastal hinterland. The Lincolnshire Coastal Country Park Project funding for land acquisition is not currently in place, however it is anticipated that funding will be established over the next 5 years. Therefore it is recommended that the potential for habitat creation associated with the Country Park Project is reviewed in the next strategy review.



# 5 Constraints Plan

The potential environmental and social issues described in Section 2.3 will constrain the future detailed design, construction and operation of the proposed option. Important constraints are presented on Appendix 1 – Figures 2 to 9 and summarised below.

- Ramsar sites;
- Special Area of Conservation (SAC);
- Special Protection Area (SPA);
- Site of Special Scientific Interest (SSSI);
- National Monuments Records (NMR);
- Regionally Important Geological Sites (RIGS);
- National Nature Reserve (NNR);
- Local Wildlife Site (LWS);
- Site of Nature Conservation Importance (SNCI).
- Public Footpaths;
- Bathing Water Monitoring Points;
- Vehicle Access Points onto beach;
- Land Drainage outfalls;

# 6 Consultation

## 6.1. Past Consultation

Extensive consultation was undertaken for the Environmental Statement prepared in 2004. Since 2005 we have offered annual stakeholder consultation to present the results of environmental monitoring. It is foreseen this practice will continue.

At each strategy review the beach nourishment options have been consulted upon. Responses to these consultations have determined the issues to be addressed.

## 6.2. Consultation for the 2010-2015 Works

Table 8 describes the Lincshore Coastal Defences Strategy Project Appraisal 2010 – 2015 consultation process, including consultation undertaken during the scoping process and the continuing through the environmental assessment.

Table 8 - Consultation Process

Consultees	Consultation Stage	Date
Consultation with all stakeholders	Pro-forma	April 2009
Consultation with all stakeholders	Scoping Consultation Document	May 2009
Report Available	Scoping Report	June 2009
Ongoing consultation with relevant consultees	Environmental Assessment	Summer / Autumn 2009



Scoping consultation has been undertaken with the statutory consultees (listed below) and other non-statutory consultees and interested parties.

*Statutory consultees*

- Natural England;
- English Heritage;
- Environment Agency:
  - Fisheries, Recreation and Biodiversity;
  - Ecological Appraisal, Water Resources;
  - Flood Risk Management;
  - Environmental Management;
  - Operations Delivery;
  - Asset System Management;
  - Groundwater and Contaminated Land;
  - Planning Liaison;
  - Development Control; and
  - Monitoring Data.
- East Lindsey District Council:
  - Environmental Protection;
  - Planning;
  - Coastal Management;
  - Tourism;
  - District Councillors; and
  - Local Strategic Partnership.
- Lincolnshire County Council
  - Environmental Conservation;
  - Historic Environment Record; and
  - Coastal Communities Alliance.

In April 2009 an initial consultation pro-forma was issued to 124 statutory and non-statutory consultees requesting comments on the Lincshore Coastal Defences Strategy Project Appraisal 2010 - 2015. The 20 responses received are given in Appendix 5.

In May 2009 a Scoping Consultation Document was issued to 133 statutory consultees and interested parties. The 13 responses received are given in Appendix 6.

A summary of the key topics arising from the pro-forma and Scoping Consultation Document responses are listed below:

- Several responses expressed positive support for maintenance of flood defence and for the maintenance of beaches for tourism and wildlife purposes.
- The aesthetic and commercial value of the beaches to the local economy and community was noted.
- English Heritage supports the protection of the clay strata underlying the sandy beaches. They also recommended regard to known archaeological features and historic structures and wrecks. English Heritage have recommended that a protocol should be in place for the reporting and recording of unexpected discoveries of historic interest made during the course of the proposed works.
- Eastern Sea Fisheries Joint Committee queried if it were possible to detect any changes in inshore brown shrimp populations or other epibenthic populations that might be induced by beach nourishment activities against the natural variation in

background populations. They also asked if the beach nourishment could in any way affect the sublittoral mussel beds off Skegness and the opportunities to harvest this resource.

- The requirement for further monitoring of sediment transport towards Gibraltar Point and the Wash was queried by the Eastern Sea Fisheries Joint Committee.
- Lincolnshire Wildlife Trust queried the cause of erosion hotspots.
- Lincolnshire County Council and the Environment Agency Business User have raised the opportunities associated with the proposed Coastal Country Park Project.
- The possibility of cumulative effects or in-combination impacts with effects of offshore wind farms was raised by the Eastern Sea Fisheries Joint Committee.
- Skegness Town Council have expressed concerns about the ongoing problems of windblown sand on the promenade in Skegness.
- The Mablethorpe & Sutton Chamber of Trade (MASCOT) raised the issue of timing of beach closures, particularly around Sutton, Trusthorpe and Mablethorpe, to avoid bank holidays and peak tourist periods.
- The requirement for discussions regarding consent requirements was raised by Environment Agency Development and Flood Risk team.

As part of the scoping consultation process, a meeting was held between the Environment Agency and representatives from the fisheries industry on 12th May 2009. The representatives, collectively known as the Great Wash Fisheries Industry Group (GWFIG), considers there is a large volume of sand lost annually from the beach/re-nourishment works which is carried into the Wash. Consequently the GWFIG considers that:

- There is a reduction of channel depth where channels (such as Swatch Way and Wainfleet) are filling up with coarse sediment.
- The weather conditions cause erosion along the coastline, which is carried into Boston. A hill of sand has accumulated at Boston Deep.
- Shrimp feeding grounds are being suffocated by fine sediment. The loss of suitable shrimp habitat is resulting in the loss of shrimp populations and suitable fishing grounds at Skegness and the Wash.
- Dredging is causing the erosion of outer sands at Middle Bank and Wall Pac.
- The reduction in water depths has reduced the capacity for lee side refuge for fishing vessels from weather conditions along the Lincshire coast introducing a health and safety concern.

In light of the issues raised at the meeting it is proposed that further discussions take place to reach a common consensus on the way forward, for example adapting the future environmental monitoring (Section 2.2.1.5) of epibenthic populations to gain further data that all parties consider acceptable.

As part of the scoping consultation process, a meeting was held between the Environment Agency, Natural England and the Lincolnshire Wildlife Trust to discuss the coastal geomorphology.

### **6.3. Future Consultation**

We will use this Scoping Report to inform our internal Environment Agency specialists, external statutory consultees and interested parties about the Lincshire Coastal Defences Strategy Project Appraisal 2010 – 2015.

Following completion of the scoping stage, we will use the data and information received from consultees to guide the need for further investigation (Section 2.4) and production of

the Environmental Statement. We will continue to consult stakeholders, appropriate to the issues identified, through the environmental assessment process and construction phase. Where the need for statutory and other consents is identified, we will contact the appropriate authorities.

## 7 Conclusion

### 7.1. Conclusions

The proposed beach nourishment project over the next five years (2010-2015) will meet the objectives of the Lincshire Coastal Defences Strategy by reducing the risk of coastal flooding, along the Mablethorpe to Skegness frontage.

The main positive benefit of the scheme, which provides the socio-economic justification for the major expenditure involved, will be the protection and maintenance of the existing line of defence. This will manage the coastal flood risks to 18,386 properties, approximately 35,000ha of land and areas of ecological interest that would otherwise be at risk of permanent loss by encroachment of the sea under a do-nothing policy. There is also a positive benefit to the community from the provision and maintenance of a beach.

A review of the baseline information and the consultation undertaken as part of the scoping process has identified a number of key issues which will need to be addressed during the design development and EIA. A justification of the key topics scoped in and out of the environmental assessment process is given in Section 3.3. The key issues 'scoped in' to the assessment process will be investigated further through the next stage of the EIA. Appropriate consultation in relation to issues identified will continue through the ongoing design and operation of the proposed works.

The topics '**scoped in**' to the environmental assessment process are:

- Soil, Geology and Hydrogeology;
- Coastal Processes;
- Biodiversity and Fisheries;
- Population, Economy and Employment;
- Landscape Character;
- Bathing Water Quality;
- Cultural Heritage and Historic Environment; and
- Cumulative Effects.

Those topics which have been '**scoped out**' are:

- Services and Material Assets;
- Air and Climate;
- Noise and Vibration;
- Land Use and Urban Regeneration;
- Traffic and Transport and
- Resource Efficiency.

The topics 'scoped out' will not require further consideration, although appropriate management will be required during operation of the proposed scheme to minimise any potential impacts.

The detailed appraisal of the environmental impacts of the preferred option and recommended mitigation measures will be presented in an Environment Statement.

Natural England has been consulted to ensure the appropriate information was submitted to meet the assessment obligations of The Conservation (Natural Habitats, &c.) Regulations 1994 (EC Habitats Directive (92/43/EEC)).

The scoping consultation process has identified a series of enhancement opportunities which will be investigated further during the environmental assessment process, and discussed with appropriate stakeholders, to determine which options will be progressed. It is recommended that the potential for habitat creation associated with the Lincolnshire Coastal Country Park Project is reviewed in the next strategy review.

## **7.2. Next Steps**

The following actions will be undertaken to complete the EIA process.

- Issue the Scoping Report to Environment Agency specialists, external statutory consultees and interested parties to present the findings of the Scoping process;
- Undertake further investigations (Section 2.4) to inform the detailed EIA of the proposed scheme;
- Produce an Environmental Statement for the proposed scheme, assessing whether the potentially important issues identified in this report could result in significant environmental effects;
- Advertisement of the Environmental Statement for public viewing;
- Produce an Environmental Action Plan (EAP), identifying the actions required during the detailed design, construction and operation of the proposed scheme to manage the issues identified both in this Scoping Report and the Environmental Statement; and
- Continue regulatory consultation and strategic stakeholder engagement.

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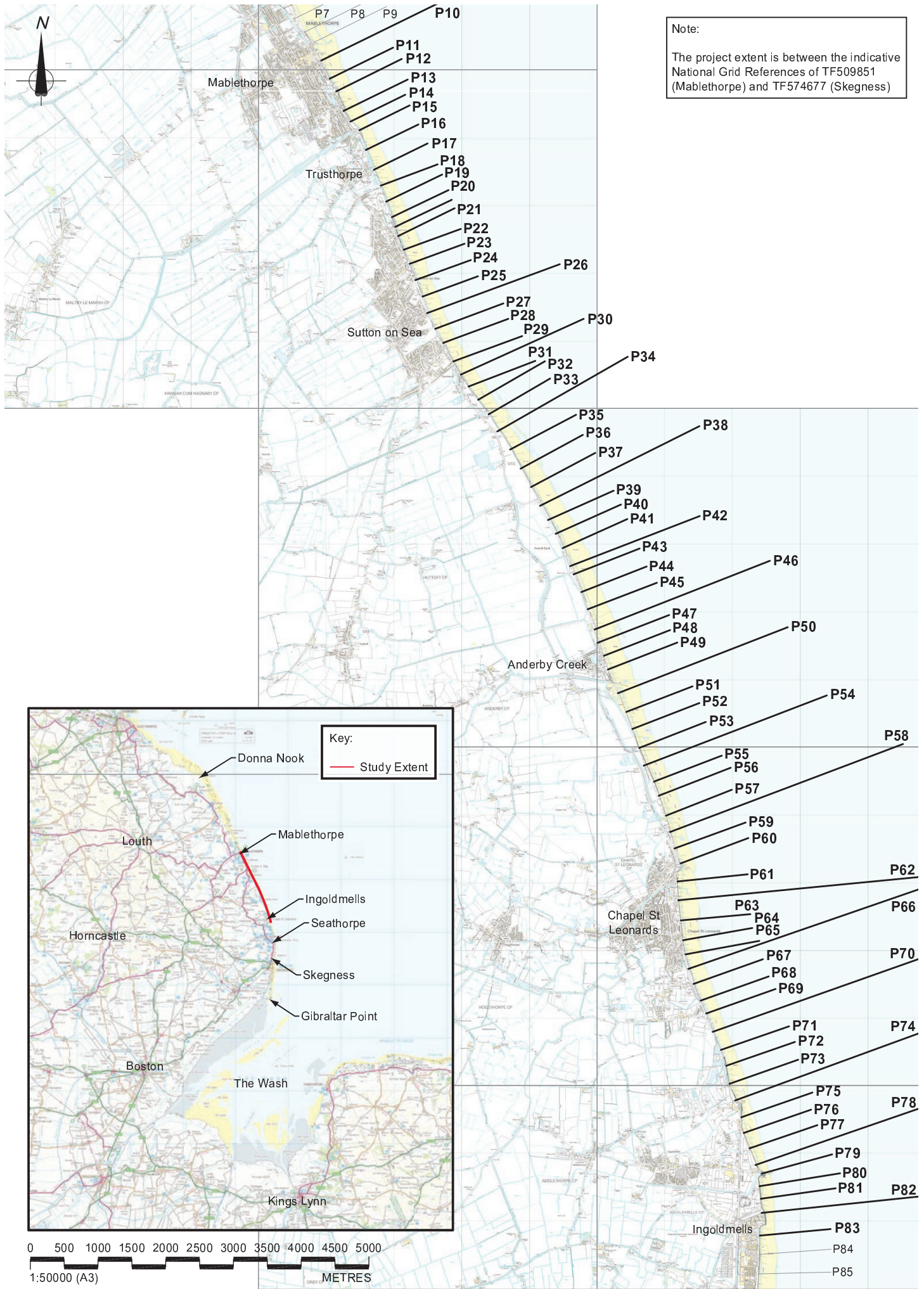
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# Appendices

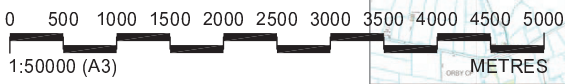
# Appendix 1 – Drawing List

<b>Drawing Number</b>	<b>Drawing Title</b>
Figure 1	Site Location Plan and Profile Numbers
Figure 2	Environmental Constraints Plan. Profile Numbers 10 to 20
Figure 3	Environmental Constraints Plan. Profile Numbers 20 to 30
Figure 4	Environmental Constraints Plan. Profile Numbers 30 to 40
Figure 5	Environmental Constraints Plan. Profile Numbers 40 to 50
Figure 6	Environmental Constraints Plan. Profile Numbers 50 to 60
Figure 7	Environmental Constraints Plan. Profile Numbers 60 to 70
Figure 8	Environmental Constraints Plan. Profile Numbers 70 to 83
Figure 9	Designated Sites
Figure 10	Conceptual Coastal Processes Model for the Lincshore Coast



Note:  
 The project extent is between the indicative National Grid References of TF509851 (Mablethorpe) and TF574677 (Skegness)

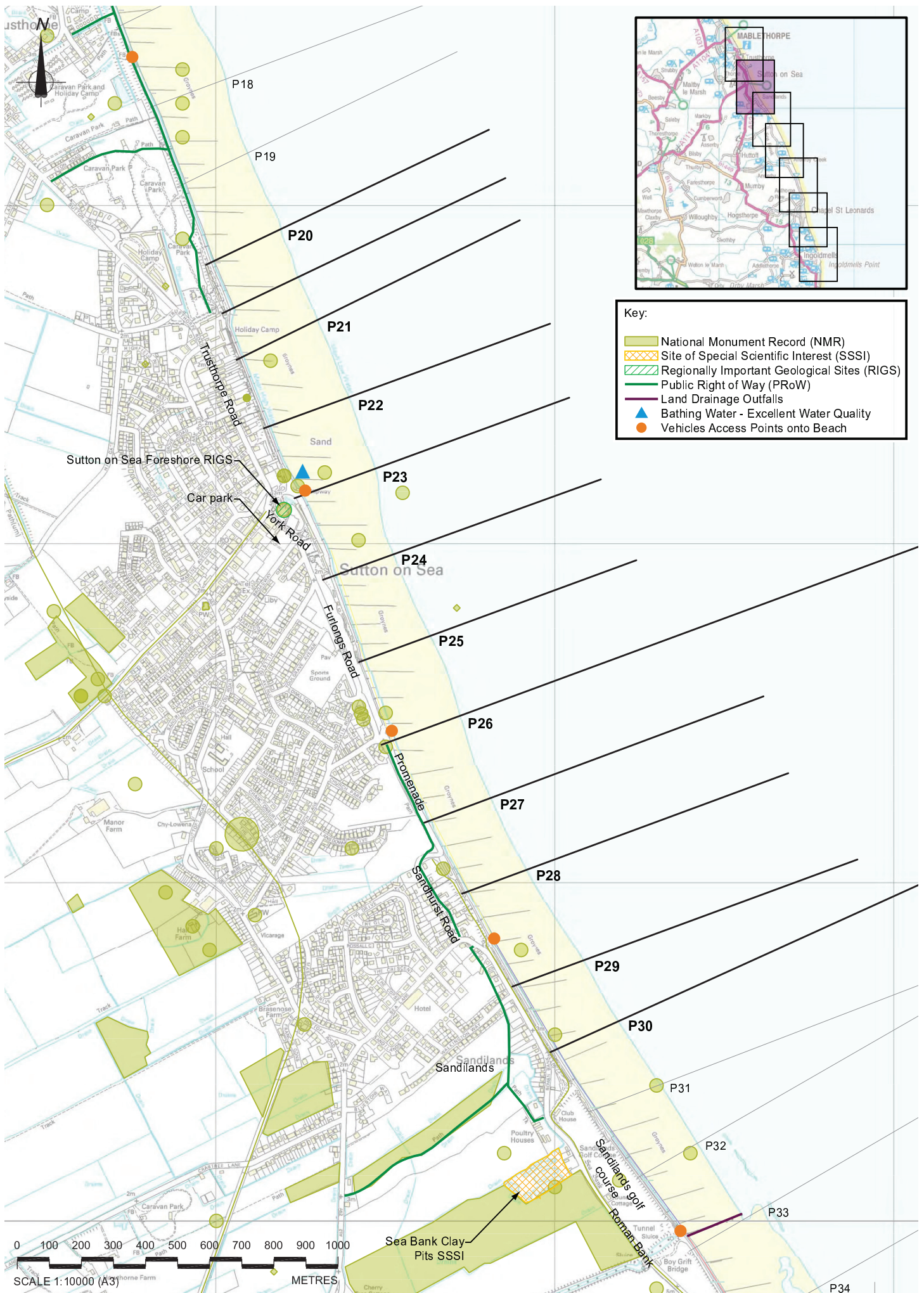
Key:  
 — Study Extent











Lincshire Coastal Defence Strategy Project Appraisal 2010-2015 - Scoping Report  
 Environmental Constraints Plan - Profile Numbers 20-30 - Figure 3

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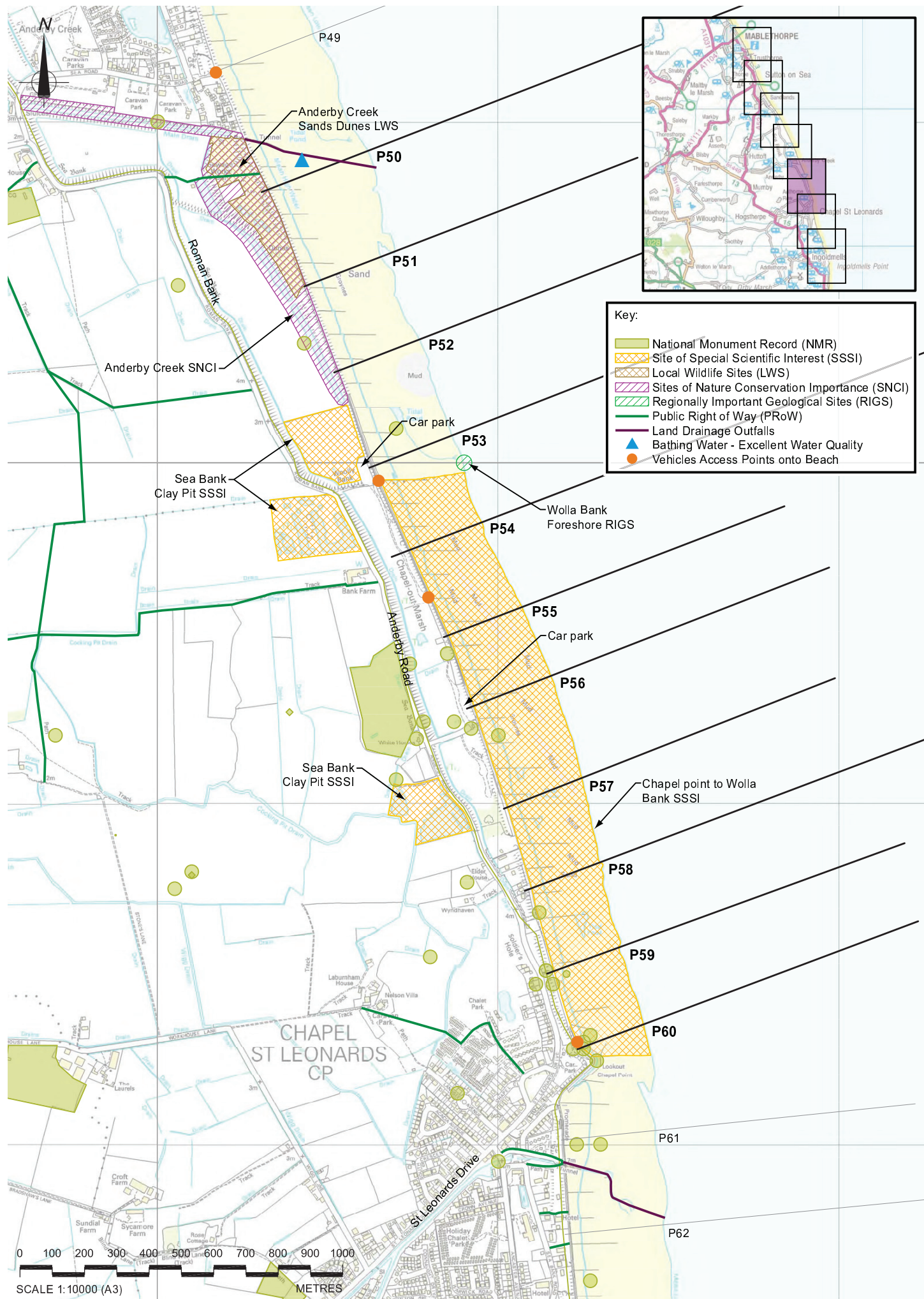




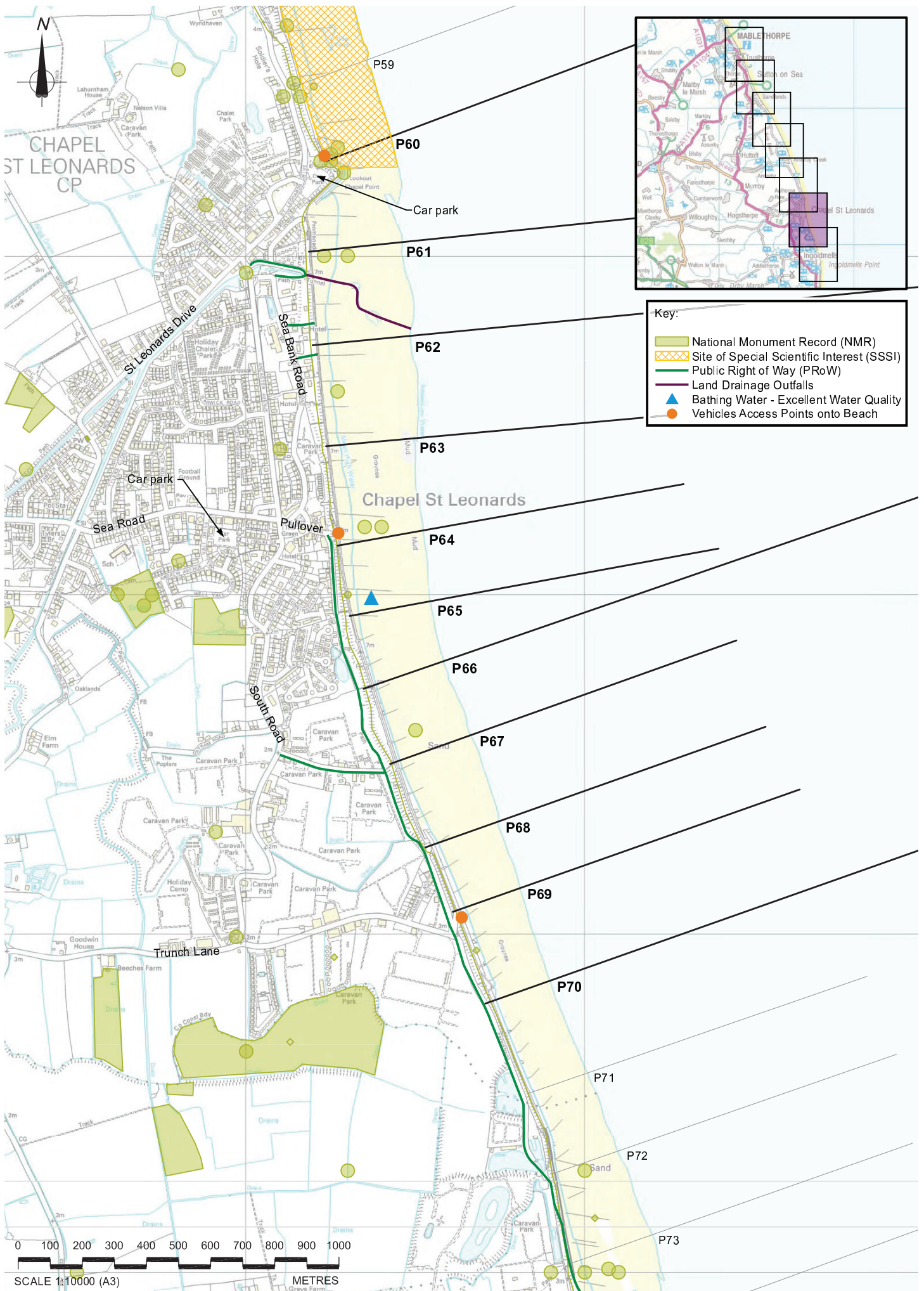








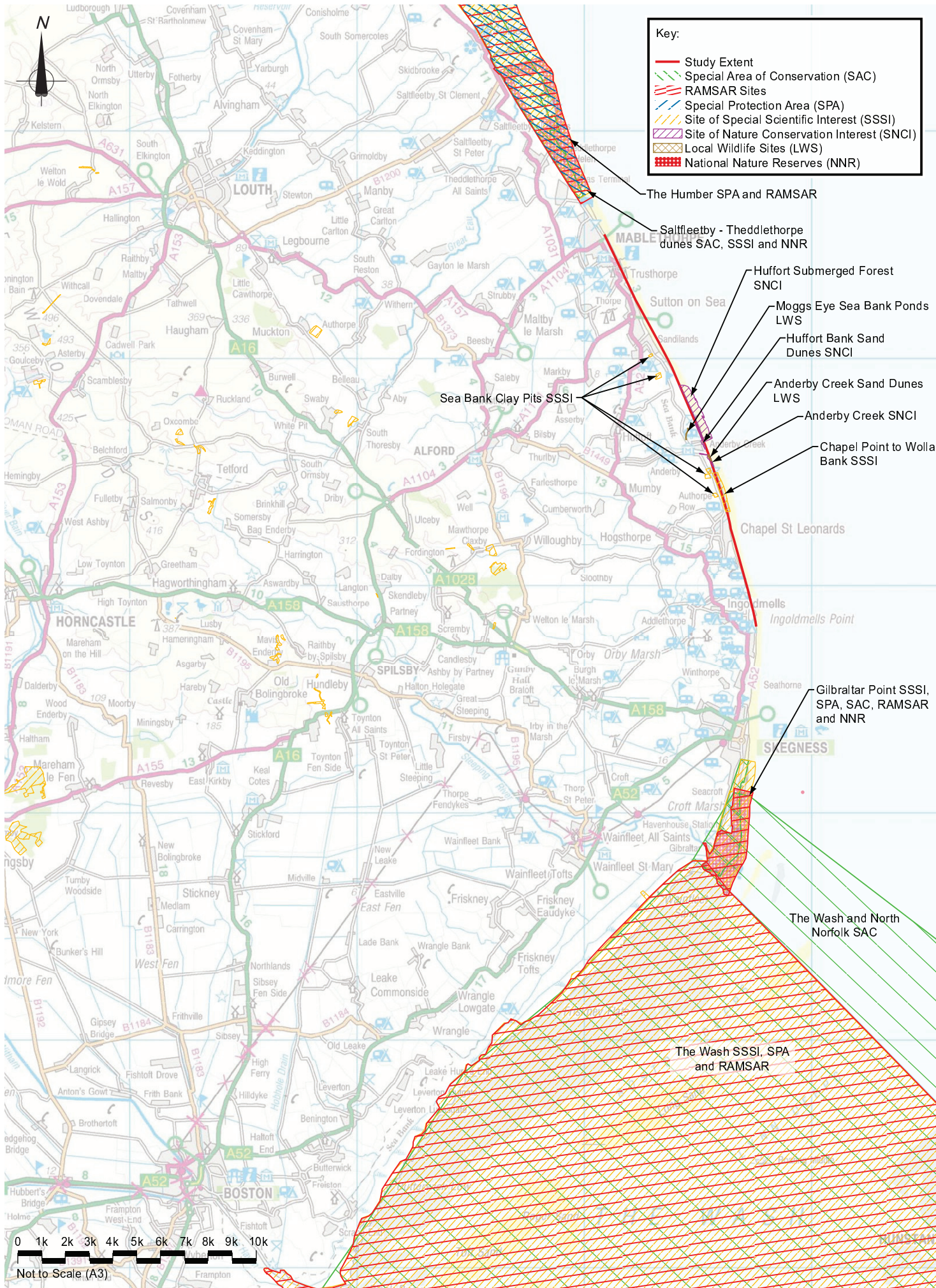




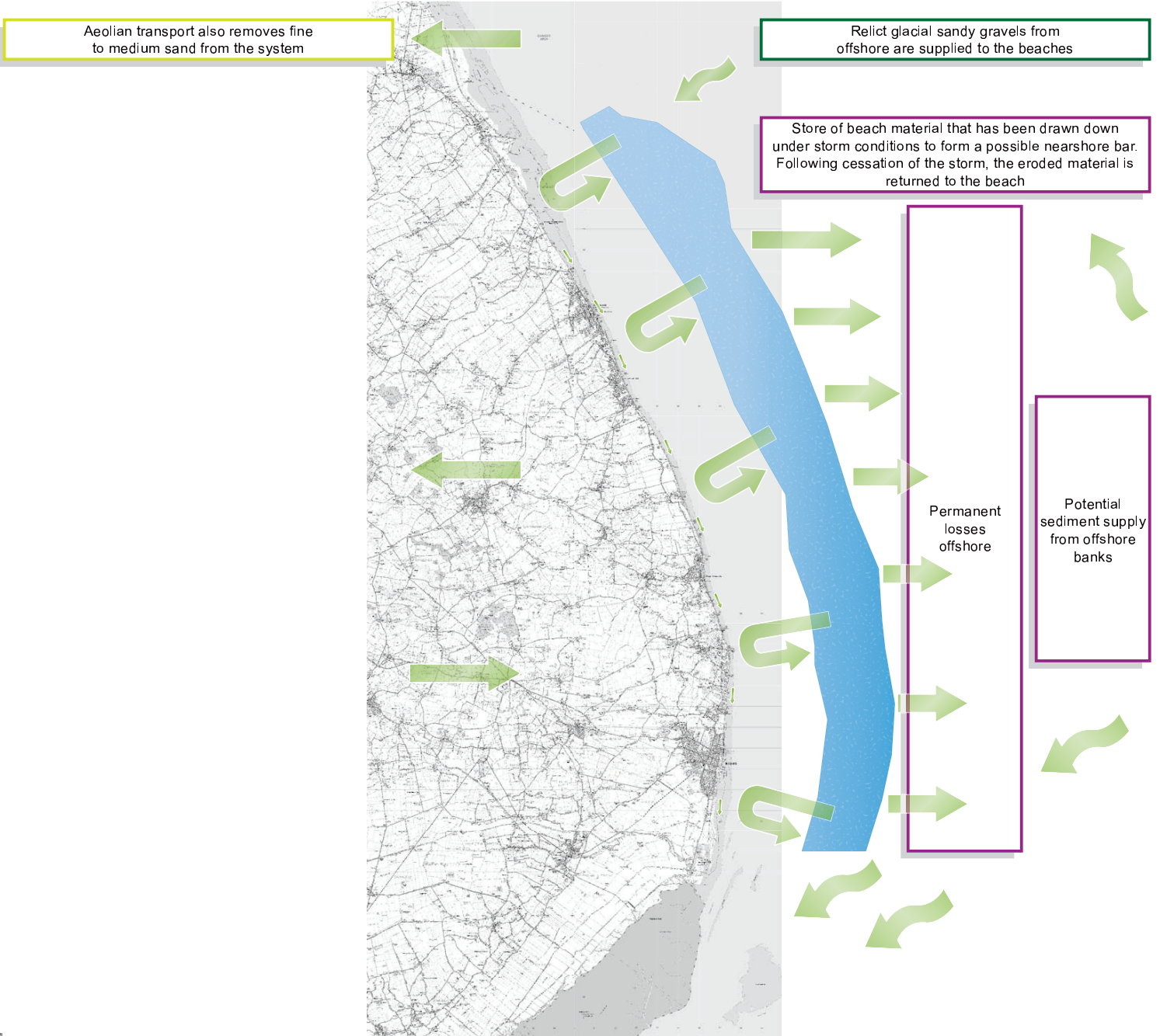






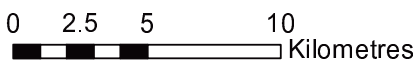






Note: Processes highlighted in yellow represent sediment inputs to the system; those in red represent losses from it and blue stores within it. Green represents movement.

Key: The size of arrows does not indicate the rate or magnitude of sediment transport and are only used to indicate potential sediment transport pathways.





## Appendix 2 – List of abbreviations

AMS	Agency Management System
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EAP	Environmental Action Plan
EIA	Environmental Impact Assessment
EMS	Environmental Management System
ESFJC	Eastern Sea Fisheries Joint Committee
FDMS	Flood Defence Management Strategy
GWFIG	Great Wash Fisheries Industry Group
HECAG	Humber Estuary Coastal Authorities Group
LBAP	Local Biodiversity Action Plan
LDf	Local Development Framework
NEAS	National Environmental Assessment Service
NNR	National Nature Reserve
NMR	National Monument Record
PRoW	Public Rights of Way
SAC	Special Area of Conservation
SCD	Scoping Consultation Document
SMR	Sites and Monuments Record
SNCI	Site of Nature Conservation Importance
SPA	Special Protection Area
SR	Scoping Report
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan

# Appendix 3 - Erosion Hotspots

Table 9 - Erosion Hotspots Over 2004-2009\*

(\* 2009 figures are current planned estimates)

Profiles	2004 Vol m3	2005 Vol m3	2006 Vol m3	2007 Vol m3	2008 Vol m3	2009 * Vol m3
10 to 11						
11 to 12						
12 to 13						
13 to 14						
14 to 15						
15 to 16	Trusthorpe		Trusthorpe	Trusthorpe	Trusthorpe	Trusthorpe
16 to 17	April		May to June	May to July	April to May	May
17 to 18	75,313		221,180	234,054	125,901	103,000
18 to 19						
19 to 20						
20 to 21						
21 to 22						
22 to 23						
23 to 24						
24 to 25						
25 to 26						
26 to 27						
27 to 28						
28 to 29						
29 to 30						
30 to 31						
31 to 32					Boygriff	
32 to 33					April	
33 to 34					51,220	Boygriff
34 to 35	Boygriff	Huttoft		Huttoft		May to June
35 to 36	103,972	April to June		July to August		46,000
36 to 37		375,454		159,647		
37 to 38						
38 to 39						
39 to 40			Huttoft			Huttoft
40 to 41			June to July			June
41 to 42			95,590			31,000
42 to 43						
43 to 44						
44 to 45						
45 to 46						
46 to 47						
47 to 48						
48 to 49						
49 to 50						
50 to 51						
51 to 52						
52 to 53				Chapel Six		
53 to 54		Chapel Six		Marshes	Chapel Six	
54 to 55		July		August to	Marshes	
55 to 56		80,698		September		
56 to 57				139,891	May to June	
57 to 58					136,738	
58 to 59						
59 to 60						
60 to 61						
61 to 62						
62 to 63						
63 to 64						
64 to 65						
65 to 66						
66 to 67						
67 to 68						
68 to 69		Ingoldmells			Ingoldmells	Trunchlane
69 to 70		July to August			(forth area)	April to May
70 to 71		321,719			June	89,000
71 to 72					92,084	
72 to 73						
73 to 74						
74 to 75			Ingoldmells	Ingoldmells		
75 to 76			March to May	April to May		
76 to 77			538,535	266,640		
77 to 78						
78 to 79						Ingoldmells
79 to 80						April
80 to 81						50,000
81 to 82						
82 to 83						
<b>Total</b>	<b>179,285</b>	<b>777,871</b>	<b>855,305</b>	<b>800,232</b>	<b>405,943</b>	<b>319,000</b>

## Appendix 4 – Cultural Heritage

Table 10 - NMR sites along the extent of proposed works and within 1 km inland.

HOB_UID	NAME	DESCRIPTION	Easting	Northing
1365618	Louth and East Coast Railway	The Louth and East Coast Railway was authorised in 1872 from Louth to Mablethorpe via Saltfleetby, whence a branch was to run North to Saltfleet Haven, and eventually to Cleethorpes, but the branch was never built. Originally this was an agricultural railway. With the arrival of the Louth and East Coast Railway at Mablethorpe, the nearby town of Sutton also wanted a railway. A 2 feet 6 inch gauge tramway was authorised from Alford to Sutton in 1884 along public roads via Bilsby, Markby and Hannah, terminating	543092.54479200000	389901.78933500000
1365621		Early Iron Age salt-workings.	548592.27080800000	378607.07519100000
355838		Former system of Medieval sea banks preventing flooding. Partly re-used as causeway for modern roads.	557158.93921400000	369317.42549900000
1032408	Old Sea Bank		526565.99614300000	331530.19183800000
1365623	Sutton and Willoughby Railway	The Sutton and Willoughby Railway opened in 1888 from Willoughby on the GNR's East Lincs Railway to join the Louth and East Coast Railway at Mablethorpe forming a loop line. Plans to develop Sutton Docks, alive at the time the loop was completed, were shelved.	551267.74154000000	377902.69147100000
1351315	Vibilia	NORWEGIAN SCHOONER, 1891	556829.99980000000	373310.00013000000
1302127	Star	ENGLISH DANDY, 1895	552090.00013000000	382429.99987000000
1059706		Probable Medieval or Post Medieval enclosures seen as earthworks.	554538.81342000000	375763.28871200000
1349980		ENGLISH BILLYBOY, 1858	550889.99989200000	385180.00013000000
1359925	Halifax	1825 wreck of British cargo vessel which stranded at Ingoldmells during a storm, while en route from London to Leeds with a general cargo, which may have included any or all of the following products: grocery provisions, spirits, hops and paper products.	557540.00000000000	368689.99982200000
1461558		1701 wreck of English craft which stranded on the coast of Lincolnshire. Constructed of wood, she was a sailing vessel.	558070.00006800000	369640.00000000000
1060739		Probable Medieval ridge and furrow seen as earthworks.	556600.00000000000	367210.00000000000

1399984		1810 wreck of Prussian brig which stranded between the mouth of the River Humber and Skegness, on her passage to London with wheat; a wooden sailing vessel.	550889.99982200000	385180.00000000000
1363806	Bb216	Aircraft BB216 was a Handley Page Halifax Mark II British heavy bomber. It was one of a batch of 200 aircraft of this type delivered between January 1942 and July 1943, by the London Aircraft Group. Served with 405 squadron. The aircraft crashed on the 2	555149.03659700000	372374.99527000000
1341872	Margaret	ENGLISH CRAFT, 1810	558069.99987000000	369639.99989200000
1351826	Lizzie Lee	ENGLISH SCHOONER, 1893	552090.00013000000	382429.99987000000
1349911	Frederica	BRITISH CARGO VESSEL, 1854	550889.99989200000	385180.00013000000
1345902	Charles and Mary	ENGLISH CRAFT, 1818	556829.99980000000	373310.00013000000
1059868		Probable World War II aircraft obstructions seen as earthworks.	556130.00000000000	370680.00000000000
1059702		Probable Medieval or Post Medieval enclosure and field boundaries seen as earthworks.	553689.45077600000	377867.48877000000
1060741		Probable Medieval field system, consisting of ridge and furrow, seen as earthworks.	556760.00000000000	367890.00000000000
507042	Mablethorpe Station	Site of railway station on the Louth and East Coast Railway opened in 1877 and closed in 1970.	550400.00000000000	385100.00000000000
1068184		Medieval ridge and furrow seen as earthworks.	551790.00000000000	382530.00000000000
1347879	Gothenburg	SWEDISH CARGO VESSEL, 1821	558069.99987000000	369639.99989200000
1068169		Probable Medieval settlement and associated ridge and furrow seen as earthworks.	551595.54967700000	381685.05359800000
1068171		Medieval settlement and associated ridge and furrow seen as earthworks.	552214.23246300000	380383.36328500000
1356378	Lancaster Mk Iii Jb229	BRITISH HEAVY BOMBER, 1943	556829.99980000000	373310.00013000000
1059864		Probable World War II pillboxes, slit trenches and aircraft obstruction seen as earthworks, now levelled.	555100.00000000000	373790.00000000000
355950		Medieval salt works overlies Iron Age salt works, indicated by briquetage.	557030.00000000000	370160.00000000000
1348707	Adventure	1821 wreck of British craft which stranded on the coast of Lincolnshire during a storm, en route from Whitby to Wisbech; a wooden sailing vessel.	558069.99987000000	369639.99989200000
893349		Findspot of a Neolithic flint axe.	556299.99994300000	372000.00010400000
1059709		Probable Medieval or Post Medieval field system of ridge and furrow seen as earthworks.	552394.62077100000	375550.89023400000
893348		Pre-historic flint implement.	556199.99999000000	373499.99992400000

1448320		1391 wreck of Prussian cargo vessel which was wrecked "off the coast of Lindsey". Constructed of wood, she was a sailing vessel, and the surviving mariners were awarded the goods from the wreck, which would otherwise have passed to the King, Queen, and t	558070.00006800000	369640.00000000000
942793	John and George	ENGLISH CRAFT, 1810	552090.00002000000	382430.00009400000
1059704		World War II aircraft obstructions seen as earthworks.	553980.00000000000	376610.00000000000
1059860		Probable Medieval or Post Medieval settlement consisting of enclosures, field boundaries, ridge and furrow and trackway, seen as earthworks.	555445.33607600000	372086.17938800000
1339400	Union	CRAFT, 1803	558069.99987000000	369639.99989200000
1068182		Medieval settlement (moat, crofts and associated ridge and furrow) seen as earthworks.	551014.07485500000	383127.28566600000
942984	Paragon	ENGLISH BARGE, 1887	552039.99989300000	383820.00002900000
1346719	William	1819 wreck of English brig which foundered off Trusthorpe after a collision on her passage from Sunderland with coal; a wooden sailing vessel.	552040.00017800000	383820.00010800000
1060753		Potential boundaries of unknown date seen as earthworks. Now thought to be a medieval/post medieval saltern.	557280.00000000000	369190.00000000000
1059705		Probable Medieval or Post Medieval enclosures and ridge and furrow seen as earthworks.	553711.67740100000	375689.99730500000
1349030	Ferdinand	PRUSSIAN CARGO VESSEL, 1821	558069.99987000000	369639.99989200000
942778	Mary	ENGLISH CRAFT, 1810	552090.00002000000	382430.00009400000
1375555	Chapel Leonards Methodist Church	Primitive Methodist chapel built in 1836, with later alterations. Built of brick with three wide round-arched windows facing the road.	555531.87641500000	372461.82643300000
1344658	Good Hope	1816 wreck of English cargo vessel which stranded on the coast of Lincolnshire during a gale, on her passage in ballast; a wooden sailing vessel.	558069.99987000000	369639.99989200000
1060754		Probable Medieval ridge and furrow seen as earthworks.	555720.00000000000	369360.00000000000
1073799		Probable Medieval field system (field boundaries and ridge and furrow) seen as earthworks.	554636.00478600000	373195.48017700000
1356754	Lancaster Mk iii Ed648	BRITISH HEAVY BOMBER, 1943	550889.99982200000	385180.00000000000
1068168		Potential Medieval settlement seen as earthworks.	551850.00000000000	382760.00000000000
942781	Garland	1810 wreck of English craft which stranded at Sutton-on-Sea during a gale; a wooden sailing vessel.	552090.00002000000	382430.00009400000

942951	Vidar	SWEDISH SCHOONER, 1880	552090.000020000000	382430.000094000000
1068175		Medieval ridge and furrow seen as earthworks.	551731.267948000000	380518.589265000000
1301945	Baltick Merchant	BRITISH CARGO VESSEL, 1784	558069.999870000000	369639.999892000000
1351323	Admiral	1891 wreck of Scottish trawler which foundered 14 miles east of Spurn Head while en route from Grimsby for Swansea. Built in 1866, she was an iron screw steamer.	550889.999892000000	385180.000130000000
1060748		Possible Medieval or Post Medieval enclosures seen as cropmarks.	556227.228781000000	369049.683760000000
1343985	Armen	BRITISH CARGO VESSEL, 1815	558069.999870000000	369639.999892000000
1343062	Hurricane Mk lic Bn232	BRITISH FIGHTER, 1942	550889.999892000000	385180.000130000000
1316084	Jenny	1831 incident in which a British cargo vessel grounded at Ingoldmells en route from Messina to Kingston-upon-Hull; a wooden sailing vessel.	557539.999870000000	368689.999870000000
1395635		1804 wreck of cargo vessel which stranded near Anderby on her passage from King's Lynn with corn, possibly during an exceptionally high tide; a wooden sailing vessel.	552090.000000000000	382429.999822000000
1068179		Probable Medieval settlement (enclosures, hollow ways and associated ridge and furrow) seen as cropmarks.	550320.000000000000	384790.000000000000
942820	La Force	FRENCH SCHOONER, 1852	552090.000020000000	382430.000094000000
1351781	Vrow Gesina	1824 wreck of cargo vessel, probably Dutch, which stranded on the coast of Lincolnshire en route from Lubeck to Grimsby; a wooden sailing vessel.	558069.999870000000	369639.999892000000
355835	Church Of Saints Peter and Paul	Parish church. 13th-15th centuries, chancel demolished 1706, restored 1858, 1898. Ashlar and squared coursed limestone rubble. Red brick. Slate and lead roofs. Western tower, nave with clerestorey, aisles, south porch, vestry. there are two late 11th	555950.000000000000	368820.000000000000
1316087	Apollo	1832 incident in which an English cargo vessel grounded at Anderby, on her passage from Kingston-upon-Hull with coal, to be recovered shortly afterwards. Constructed of wood, she was a sailing vessel.	552090.000130000000	382429.999870000000
1345816	Unity	1818 wreck of English cargo vessel which was lost near Trusthorpe. Laden with coal, she was a wooden sailing vessel.	552040.000000000000	383820.000178000000
1359929	Two Brothers	CARGO VESSEL, 1825	552040.000178000000	383820.000108000000
1419830		Second World War Type 22 pillbox with no rear embrasures, North-East of Hogsthorpe, North of Chapel St Leonards.	554876.545445000000	373907.101976000000
1059862		Probable Medieval or Post Medieval ridge and furrow and pond seen as earthworks.	555665.291677000000	374292.549917000000



1351833	Harriet	BRITISH CARGO VESSEL, 1824	550889.999892000000	385180.000130000000
1068186		Medieval ridge and furrow seen as earthworks.	551203.612275000000	382229.001038000000
1318002		CRAFT, 1627	550889.999892000000	385180.000130000000
1346563	Patent	BRITISH CARGO VESSEL, 1819	558069.999870000000	369639.999892000000
1301873	Gouldsberry	CARGO VESSEL, 1768	558069.999870000000	369639.999892000000
1302347	Betsey	BRITISH CRAFT, 1834	552090.000130000000	382429.999870000000
942825	Atlanta	ENGLISH BRIG, 1854	557539.999965000000	368690.000046000000
1351108	Mercy	ENGLISH SLOOP, 1878	550889.999892000000	385180.000130000000
942978	Lizzie Ella	ENGLISH LUGGER, 1883	552090.000020000000	382430.000094000000
1059866		Probable Medieval or Post Medieval enclosures and ridge and furrow seen as earthworks.	556003.002634000000	370652.167690000000
355998		A Neolithic flint axe, water-rolled, found on the foreshore at Mablethorpe, is in Lincoln Museum (accession number 1009.06).	550500.000039000000	385499.999869000000
1059697		World War II aircraft obstructions seen as earthworks.	552170.000000000000	379850.000000000000
1446364		1269 wreck of cargo vessel which stranded on the Lincolnshire coast at a place called "Emesdale", not now identified. Constructed of wood, she was a sailing vessel.	558070.000068000000	369640.000000000000
1348655		ENGLISH SLOOP, 1821	558069.999870000000	369639.999892000000
1301944	Kent	BRITISH CRAFT, 1781	558069.999870000000	369639.999892000000
1359924	Bee	1825 wreck of British cargo vessel which stranded at Ingoldmells during a storm, en route from London to Leeds with a general cargo which may have included any or all of the following: grocery provisions, spirits, hops, and paper products. She would have	557540.000000000000	368689.999822000000
1301852	Greyhound	1762 wreck of British cargo vessel which stranded on the coast of Lincolnshire en route from Newcastle-upon-Tyne to Poole, possibly with coal; a wooden sailing vessel.	558069.999870000000	369639.999892000000
1316673	Freedom	ENGLISH CRAFT, 1854	552090.000130000000	382429.999870000000
1068172		Medieval ridge and furrow seen as earthworks.	552749.614922000000	379998.843768000000
1316022		1830 wreck of Dutch cargo vessel which stranded between Ingoldmells and Skegness, on her passage from the Baltic Sea. Laden with tallow, timber, and staves, she was a wooden sailing vessel.	557539.999870000000	368689.999870000000
942780	Betsey	BRITISH CARGO VESSEL, 1810	552090.000020000000	382430.000094000000
1185413		The cropmarks of two possible sub-rectangular ditched enclosures are visible on air photographs (1998). The enclosures measure approximately 5m by 4m and 10m by 8m. They may be aligned on a ditch boundary to the north. Date uncertain. Other linear ditches	552710.000000000000	381810.000000000000

1060750		Probable Medieval field system, consisting of ridge and furrow, seen as earthworks.	556043.69788500000	369678.31209100000
1341918		HOY, 1810	558069.99987000000	369639.99989200000
1068170		Probable Medieval settlement and associated ridge and furrow seen as earthworks.	551890.61386000000	380880.58480200000
1342964	Friends	BRITISH CARGO VESSEL, 1813	550889.99989200000	385180.00013000000
942803	Betsey and Mary	1822 wreck of English brig which stranded at Ingoldmells Point during a gale, while en route from King's Lynn to Kingston-upon-Hull. Laden with wheat and rape seed, she was a wooden sailing vessel.	557539.99996500000	368690.00004600000
1447426		1353 wreck of cargo vessel, apparently Scottish, which appears to have stranded on the coast of Lincolnshire. Her goods were claimed by Edward III as belonging to "Scots or other[s] [of] the King's enemies or rebels". Constructed of wood, she was a saili	558070.00006800000	369640.00000000000
1342862	Gute Mutter	1813 wreck of Prussian cargo vessel which stranded on the coast of Lincolnshire en route from Riga to Kingston-upon-Hull with logwood; a wooden sailing vessel.	558069.99987000000	369639.99989200000
507089	Sutton On Sea Station	Site of railway station on the Sutton and Willoughby Railway opened in 1888 and closed in 1970.	552075.65046700000	381141.93539700000
1301871	Elenora	CRAFT, 1768	558069.99987000000	369639.99989200000
1349950	Zorgalia	BARQUE, 1857	550889.99989200000	385180.00013000000
1301947	Mary	1785 wreck of British cargo vessel which grounded on the coast of Lincolnshire en route from London to Leith, and which was later recovered; a wooden sailing vessel.	558069.99987000000	369639.99989200000
1350098	John and Harriet	CRAFT, 1823	552040.00017800000	383820.00010800000
1347849	Charlotte Augusta	CARGO VESSEL, 1820	552090.00013000000	382429.99987000000
1068183		Probable Medieval settlement and associated ridge and furrow seen as earthworks.	551630.00000000000	383260.00000000000
1446353		Wreck, reported 1256, of cargo vessel which stranded at Mablethorpe. Constructed of wood, she was a sailing vessel.	550890.00006800000	385180.00000000000
1446366		1388 wreck of Scottish cargo vessel which stranded in the Lindsey area during a storm. Constructed of wood, she was a sailing vessel.	558070.00006800000	369640.00000000000
1366208	Fortitude	1836 wreck of English brig which was wrecked off or near Mablethorpe, en route from Newcastle-upon-Tyne to London. Laden with coal, she was a wooden sailing vessel.	550889.99989200000	385180.00013000000
1347896	Brothers and Sisters	1821 wreck of English sloop which foundered off Ingoldmells; a wooden sailing vessel.	557539.99987000000	368689.99987000000

1458468		One, possibly two, Iron Age or Roman sub-rectangular enclosures and related boundaries are visible as cropmarks on air photographs (2005). As far as is visible the larger enclosure measures 137? by 108 metres.	554000.000000000000	374200.000000000000
1047762	Henrys	1831 incident in which an English craft grounded near Trusthorpe, thought to have been recovered shortly afterwards; a wooden sailing vessel.	552039.999893000000	383820.000029000000
1351186	Industry	ENGLISH SLOOP, 1883	552090.000130000000	382429.999870000000
1409622	Ann	1830 wreck of English cargo vessel which stranded on Ingoldmells Point; a wooden sailing vessel.	557540.000000000000	368689.999822000000
1338899	George	1802 incident in which a British craft grounded on the coast of Lincolnshire, to be recovered shortly afterwards; a wooden sailing vessel.	558069.999870000000	369639.999892000000
943066	Splendid	ENGLISH CARGO VESSEL, 1865	550890.000037000000	385179.999802000000
1059707		Banks of unknown function, probably Medieval or post Medieval, seen on air photographs.	554150.000000000000	376220.000000000000
1302399	Vive	ENGLISH KETCH, 1880	556829.999800000000	373310.000130000000
1059696		Probable Medieval or Post Medieval enclosures seen as earthworks.	552230.294286000000	379390.632744000000
1068180		Medieval settlement and associated ridge and furrow seen as cropmarks and earthworks.	550142.301377000000	383487.061092000000
1478949		World War 2 earthwork aircraft obstruction consisting of a ditch flanked by sections of bank.	555387.000000000000	374268.000000000000
356001		RB bronze brooch.	550500.000039000000	385499.999869000000
1360375	Drie Zusters	1826 wreck of Dutch craft which stranded near Ingoldmells after departing from Kingston-upon-Hull for Amsterdam; a wooden sailing vessel.	557539.999870000000	368689.999870000000
1437230		1752 wreck of coaster which stranded on the coast of Lincolnshire during a storm; a wooden sailing vessel.	558070.000068000000	369640.000000000000
942822	Maria	ENGLISH SCHOONER, 1853	552090.000020000000	382430.000094000000
1068181		Probable Medieval settlement and associated ridge and furrow seen as earthworks.	550978.947004000000	383618.361420000000
1073713		Probable Medieval settlement (tofts, ridge and furrow, ponds and enclosures) seen as earthworks.	549294.784778000000	384481.692338000000
1068188		Probable World War II aircraft obstructions seen as cropmarks and earthworks.	550340.000000000000	384690.000000000000

1336682	- and Esther	1795 wreck of English craft which stranded on the coast of Lincolnshire; a wooden sailing vessel.	558069.99987000000	369639.99989200000
355947		Probable Medieval salt works seen as earthworks and pottery finds.	556680.00000000000	370950.00000000000
1352176	Ouzel	BRITISH DRIFTER, 1941	550889.99989200000	385180.00013000000
1060744		Potential enclosure of unknown date seen as earthworks.	557480.00000000000	367700.00000000000
1059865		Possible Medieval or Post Medieval water meadow seen as earthworks, now levelled.	556260.00000000000	370930.00000000000
1351063	Beecher Stowe	ENGLISH BARQUE, 1876	550889.99989200000	385180.00013000000
1446341	Jacobus	1255 wreck of German cargo vessel which stranded in a storm in the Lindsey area of Lincolnshire. Constructed of wood, she was a sailing vessel.	558070.00006800000	369640.00000000000
1380897		Wesleyan Methodist chapel built in 1910 by John Wills and Sons. The building is of red brick with stone dressings and has an octagonal corner turret with a dwarf spire. There are contemporary iron railings around the building.	551968.84896900000	381814.18716400000
1437176		1752 wreck of coaster which stranded on the coast of Lincolnshire during a storm; a wooden sailing vessel.	558070.00006800000	369640.00000000000
1480953		Two pewter plates with incised scenes dug up in Ingoldmells and dated to the 17th century.	557500.00000000000	368500.00000000000
1480925		Roman ditch containing a large quantity of animal bones and 3rd-century pottery, including 'dog dishes' and a jar with a lug handle. Leather fragments possibly from shoes were also found. This could indicate Roman settlement in the area.	557550.00000000000	368650.00000000000
1483567		Pottery dating from Saxo-Norman period onwards found at Trusthorpe.	551400.00000000000	384100.00000000000
1419834		Base of hexagonal Second World War pillbox at Chapel Point.	556288.75500000000	373245.64100000000
1418952		Second World War concrete Type 22 pillbox near Mumby, Lincolnshire.	555100.00000000000	373800.00000000000
1060749		Potential enclosure of unknown date seen as cropmarks.	556310.00000000000	369310.00000000000
1484575	Bourne Farm Cottage	Cottage, circa 1700, altered circa 1800. Mud and stud, rendered with steeply hipped corrugated plastic roof, presumably over thatch, with single ridge stack. Lobby entry, T-plan. Single storey plus garret, 3-bay front. Grade II listed.	551151.00000000000	383124.00000000000
1486128		Two parallel rows of mounds, TF 5250 8060, TF 5320 7970. Possibly Second World War anti-glider defences.	553000.00000000000	380100.00000000000

1484868		Remains of small fishing vessel partially buried on sandy foreshore. Appears to be very similar to other remains of fishing vessels seen locally and possible indicative of a local vernacular tradition of boat building. Recorded in 1997.	552420.000000000000	382010.000000000000
1483268		An area of post medieval clay extraction pits identified from aerial photographs.	550900.000000000000	385300.000000000000
355968		Roman pot found 1965.	555970.000000000000	370990.000000000000
1419829		Two type 22 pillboxes, which the recorder says are relocated. Mole End.	554700.000000000000	374200.000000000000
1479772		Mammoth tooth, probably of the later Ice Age, found on the foreshore.	557130.000000000000	369490.000000000000
1479722		Medieval Ampulla and Pottery. A pilgrim ampulla and medieval jugs found were found during a survey before 1980 when levelling ground for caravans (ELI5645). A fragment of Toynton jug was found on approximately the same site a year later.	556750.000000000000	369720.000000000000
1484926	Marsoville	A very early, important and well-preserved example of a holiday cottage constructed using 2 Great Eastern railway carriages. Timber with pantile roof and external brick stack to rear. Entrance front has 5 arch open wooden verandah with spilt balusters to	552434.000000000000	381481.000000000000
1479646		Cropmark ditch and banks of unknown date. Identified from documentary sources.	556900.000000000000	370000.000000000000
1483528		Prehistoric flint knife found at Mablethorpe, MoLAS report.	551400.000000000000	384390.000000000000
1484872		Medieval Ridge-and-furrow earthworks on land west of Sutton on Sea.	551520.000000000000	381800.000000000000
1483574		Probable post medieval clay pits and associated features. (Rectangular structures cut by groyne.)	551660.000000000000	383900.000000000000
355931		A Romano-British potsherd was found near the high-water mark at Anderby.	555700.000000000000	375100.000000000000
1479435		Scatter of medieval pottery, including 3 jug handles and other green glaze sherds together with calcined animal bone found close to mound and possible causeway on east side across ditch.	555350.000000000000	372370.000000000000
498305		A tower mill built in 1881 for cereal milling. It ceased working in 1935 only the base remains and is now used as a store.	551300.000000000000	383900.000000000000
1478729	Diver Fringe Diver Battery Li	Site of a Second World War heavy anti aircraft (Diver) battery in the Diver Fringe at Mablethorpe. It was armed with four 3.7-inch Mark IIc guns equipped with Predictor AA No.10 Mark 1, and Radar AA No.3 Mark V when it was deployed here on 13th February	550800.000000000000	385300.000000000000

1478969		World War 2 square pillbox. Some remnants of this pillbox survive amongst the sand dunes above the beach.	556140.000000000000	373510.000000000000
1479620		13th-14th century pottery found at Huttoft Bank in 1962.	554000.000000000000	378000.000000000000
1484913		A few sherds of late Saxon pottery was recovered during the watching brief on the Sutton on Sea to Mablethorpe rising main. The number of sherds, however, was too small to permit dating of the marine retreat and subsequent settlement activity.	551600.000000000000	381550.000000000000
355938		Romano British beaker.	554150.000000000000	377690.000000000000
1483138		Early Iron Age saltworking site with briquetage and pottery, including Belgic found in 1954. At a later date briquetage and burnt surfaces were seen exposed in mud on the beach.	557450.000000000000	367420.000000000000
1479603		Small group of post medieval, rectangular walled enclosures, possibly for oyster beds or fish farming. Identified from documentary sources.	554000.000000000000	379000.000000000000
1484623	Acorn	Remains of the brig Acorn, an ice ship beached in order to be broken up for scrap in the late 19th century.	552320.000000000000	382210.000000000000
1059703		Probable Medieval or Post Medieval enclosure seen as earthworks.	553770.000000000000	378490.000000000000
1479452		An artefact scatter composed mainly of medieval and post-medieval pottery sherds was recovered during a watching brief. Post-medieval brick and fired clay fragments, a glass bottle and a hone were also present.	555698.000000000000	371968.000000000000
1484850		A wooden hurdle or structure was exposed by currents on the tidal flats at Sutton on Sea. Samples from the hurdle were radiocarbon dated to the late Saxon period. The criterion for the selection of the 'rods' seems to have been for thickness rather than	552550.000000000000	382150.000000000000
1479779		Early Iron Age salt working site with briquetage, shallow vessels etc near circular enclosure IN17.	557190.000000000000	369380.000000000000
355959		Early Bronze Age flint dagger.	556300.000000000000	373000.000000000000
356014		Romano British pottery.	552160.000000000000	382540.000000000000
1059662		Possible Medieval or Post Medieval drains and/or enclosures seen as earthworks.	555060.000000000000	375520.000000000000
1479437		Romano British greyware base and fragment of human skull close by. Found on the shore just north of the pullover.	556400.000000000000	372200.000000000000
1479807		Small Romano-British rustic ware cooking pot in grey fabric found at Ingoldmells, embedded in clay which is only revealed at certain low tides at the end of sea lane.	557500.000000000000	368700.000000000000



1478676	Medieval Ridge and Furrow. Probable late medieval earthwork ridge-and-furrow.	556000.00000000000000	370652.00000000000000
893345	Salt works of unknown date, destroyed by the construction of a golf course.	553300.00000000000000	379800.00000000000000
498304	Windmill of uncertain date	551600.00000000000000	383700.00000000000000
1429625	Second World War rectangular pillbox, with 3 bays. Near the A52, Mablethorpe.	551200.00000000000000	384200.00000000000000
356008	Post-medieval clay extraction pits for using clay to build and repair sea defences, found in the inter-tidal zone following severe storms, when the sand was washed of the beach, most notably in 1953. Previously thought to be a salt making site using the	552240.00000000000000	382170.00000000000000
1484907	Place name evidence for a manor.	551650.00000000000000	381600.00000000000000
1479438	Medieval Earthworks. A square eminence located in field west of shopping centre. To the north and south some possible medieval ditches are visible.	555800.00000000000000	372100.00000000000000
1479709	Possible post medieval clay pits. Rectangular hollows and trenches indicating former clay pits on clay outcrop. Identified from documentary sources.	557000.00000000000000	370000.00000000000000
1486130	Almost continuous line of rectangular structures (including pits and enclosures) on shore between TF 5160 8350 TF 5240 8200. Probable clay pits and associated features of post medieval date.	552000.00000000000000	380000.00000000000000
355844	Possible Medieval salt-working site.	557450.00000000000000	368600.00000000000000
1060752	Potential enclosure of unknown date seen as earthworks.	557150.00000000000000	369420.00000000000000
1060740	Possible Medieval or Post Medieval enclosures and boundaries seen as earthworks, but now built over.	556990.00000000000000	367720.00000000000000
1483270	Two sides of possible post medieval / modern rectangular walled enclosure on sand. Identified from documentary sources.	551000.00000000000000	385190.00000000000000
1483134	Early Iron Age salt working site with briquetage and pottery, including Belgic found in 1954. At a later date briquetage and burnt surfaces were seen exposed in mud on the beach.	557450.00000000000000	367510.00000000000000
1486118	Area of medieval ridge-and-furrow cultivation recorded from aerial photographs.	552850.00000000000000	380200.00000000000000
355965	Bronze Age flint scraper.	556220.00000000000000	373280.00000000000000
1483285	The remains of a ship are visible, mostly buried in sand, on the beach at Mablethorpe, possibly the Stavanger, a Norwegian vessel, brought in for scrapping. The gazetteer dates the wreck as early modern.	551140.00000000000000	384920.00000000000000

355974		Neolithic antler pick found 1969.	556350.000000000000	372200.000000000000
1484862		Area of clay pits and associated track of post medieval date.	552200.000000000000	382100.000000000000
355953		Romano British Jar of 3rd century date.	556270.000000000000	372600.000000000000
1480952		Roman hand bricks were found while metal detecting.	557400.000000000000	368500.000000000000
1059863		Possible Medieval, Post Medieval or potentially Modern enclosure seen as cropmarks.	555050.000000000000	373750.000000000000
1484544		Probable medieval earthwork ridge-and-furrow.	551005.000000000000	383346.000000000000
1483264	Tennysons Cottage	Cottage. Late 17th century, with 19th- and 20th-century alterations and additions. Colourwashed brick with concrete tiled roof having brick-coped tumbled gables, axial ridge stack. 2-storey, 4-bay front with to left a 20th century flat roofed porch. This	550581.000000000000	385511.000000000000
1483291		Former houses (levelled) and garden plots of post medieval / modern date. Identified from documentary sources.	551100.000000000000	384700.000000000000
1483515		Cut rectangular hollows on shore. Probable post medieval clay pits and associated features.	551270.000000000000	384600.000000000000
355956		Iron Age salt works indicated by briquetage.	555500.000000000000	370000.000000000000
1479731		Romano-British site, possibly a farmstead, seen during construction of sea defences before 1935 (ELI5650). Pottery dating to 2nd and 3rd centuries was recorded together with brick and bone. More pottery and animal bones were seen when a small area of the	557430.000000000000	369660.000000000000
1483112		Bronze horseshoe shaped object, possibly a purse fitting, found at a depth of 4.88m 'close to Roman Bank'. It is inscribed with -PAX- with two birds, probably doves, on either side.	557140.000000000000	367980.000000000000
1483564		Possible post medieval trackway. Associated with probable clay pits (adjacent to groynes?).	551300.000000000000	384300.000000000000
1485873		Area of medieval ridge-and-furrow cultivation recorded from Aerial Photographs.	552500.000000000000	381400.000000000000
1483587		The edge of a round-cornered medieval moated site was revealed in November 1952. Pottery of 13th-/16th-century date was recovered.	551600.000000000000	383800.000000000000
355971		Roman pottery found 1965.	556250.000000000000	373300.000000000000
1479805		An undated earthwork linear feature was identified from aerial photographs.	557390.000000000000	368980.000000000000
839123	Sandilands Golf Course	An eighteen-hole seaside links golf course founded in 1901.	553190.000000000000	380120.000000000000

1479725		Medieval Pilgrim Ampulla. 14th-15th century lead alloy pilgrim ampulla (holy water container); scallop shell/shield with cross type. Found 5 inches down at the end of Anchor Lane.	557100.0000000000000	369700.0000000000000
1483292		Remains of wooden sailing merchant ship of early modern date. Probably being broken up as scrap on beach.	551340.0000000000000	384670.0000000000000
1075133	Lincolnshire Seaside Convalescent Home	Convalescent home of 1871 by James Fowler. A bath house was added in 1875 supplied with both salt and fresh water. Now demolished.	551300.0000000000000	384500.0000000000000
1479482		Ridge-and-furrow post-medieval ploughing, identified from documentary sources.	553400.0000000000000	379600.0000000000000
1483602		Medieval ridge-and-furrow surviving as earthworks in 2002.	551500.0000000000000	383500.0000000000000
1478779		World War 2 anti-tank block on bank to east of Anderby Road. Identified from aerial photographs.	555740.0000000000000	374410.0000000000000
1479795		Early Iron Age salt working site with briquetage, shallow vessels etc.	557290.0000000000000	369120.0000000000000
1484921		Post medieval clay pits. Cut rectangular pits on clay outcrop. Two tracks lead from shore to outcrop.	552500.0000000000000	381500.0000000000000
1486020		Medieval ridge-and-furrow earthworks on land west of Sutton on Sea.	551760.0000000000000	381290.0000000000000
1478688		Lower Palaeolithic flint blade, find spot.	555010.0000000000000	376810.0000000000000
1479800		Cropmark and earthwork features have been identified on aerial photographs which have been interpreted as medieval enclosures and boundary ditches. A trial trench was excavated on a development site by LAS In 2000 (ELI230) across one of the cropmark feat	556280.0000000000000	369100.0000000000000
1479711		Iron Age or Roman saltern site was exposed by movement of sand to the north of Ingoldmells Point. A large quantity of briquetage and hand bricks were recovered during investigations in 1979 (ELI5664). Some burnt material was associated with the debris, b	557100.0000000000000	370000.0000000000000
1060738		Possible Medieval or Post Medieval enclosure and boundary seen as earthworks, but now built over.	556930.0000000000000	366920.0000000000000
1480937		Saltern scatter, exposed in beach erosion in August? 1980. Possibly a site already noted by Professor Swinerton. In September 1980 the site was explored further and revealed a number of troughs (ELI5663). The troughs were not in or on a hearth and there	557550.0000000000000	368590.0000000000000

1479644		Medieval saltern site.	557070.000000000000	370010.000000000000
1484583		Post-medieval ridge-and-furrow.	551500.000000000000	383000.000000000000
1419835		Type 22 pillbox in river embankment. Ingoldmells Point.	557400.000000000000	368600.000000000000
1484916		This was the site of a level crossing with the narrow gauge Alford and Sutton tramway 1886-88. The box was the only surviving feature and has now been restored and rebuilt at Legbourne railway museum.	551670.000000000000	381550.000000000000
	Coastal Defence/Chain Home Low Station M59	The site of a Coastal Defence/Chain Home Low (CD/CHL) radar station at Huttoft Bank. It was built by the British Army to monitor shipping and aircraft during the Second World War. CD/CHL sites opened from 1941 and comprised a brick or concrete operations	553900.000000000000	378500.000000000000
1477992		A quantity of Romano-British pottery was found during a watching brief on the Sutton on Sea Mablethorpe rising main. This may indicate the existence of contemporary occupation sites in the vicinity sealed by the marine transgression silt layer.	551600.000000000000	381550.000000000000
1484914		Site of World War 2 company Headquarters at White Horses from 1941, north of Chapel Point.	555760.000000000000	374190.000000000000
1478958		Possible Iron Age / Romano British artefacts. Hand bricks and base of gritty jar found close to saltern troughs, Ingoldmells.	557550.000000000000	367800.000000000000
1483116		World War 2 Pillbox. Possible pillbox on sand.	557400.000000000000	367130.000000000000
355868		Hut circle group. (Wooden piles, clayfloors & briquetage).	557500.000000000000	368700.000000000000
356020		Iron Age Beaker fragment found.	553400.000000000000	380200.000000000000
1412034		The site of a Royal Observer Corps monitoring post. The site was built as part of an extensive network of posts designed to confirm and report hostile aircraft and nuclear attacks on the United Kingdom. At the time of the Defence of Britain survey the site	556110.000000000000	373470.000000000000
1483572		Rectangular structures (cut by groyne). Probable post medieval clay pits.	551600.000000000000	384000.000000000000
1059861		Probable pit of unknown date seen as cropmarks.	556100.000000000000	372430.000000000000
1477393	Chain Home Low Station Chl33	The site of a Royal Air Force Chain Home Low radar station at Ingoldmells established by June 1941. It provided early warning of low-flying enemy aircraft approaching Nottingham and the industrial cities of the north Midlands. Chain Home Low sites typical	557100.000000000000	369700.000000000000
1484580		Large unpolished Neolithic flint axe found in Trusthorpe.	551000.000000000000	383000.000000000000

356005		Possible Iron Age and Roman occupation site with hut sites. Medieval finds including pottery. Roman pottery and a coin hoard containing coins dating from Augustus to the mid-4th century AD. Neolithic axe.	551210.000000000000	384770.000000000000
1086392		Unspecified Roman and Mediaeval remains have been found at Sea Road.	555200.000000000000	372200.000000000000
1478956		Rectangular enclosure on shore (partly sand covered). Possible remains of post medieval oyster or fish farming, identified from documentary sources.	556000.000000000000	374200.000000000000
1479619		Rectangular enclosure on shore. Possibly post medieval clay pits. Identified from documentary sources.	554400.000000000000	378300.000000000000
1483114		Possible Romano-British pottery found on the shore just north of the holiday camp.	557400.000000000000	367900.000000000000
1059869		Probable World War II searchlight battery seen as earthworks, now levelled and visible as cropmarks.	555910.000000000000	371300.000000000000
1478979		World War 2 gun platform south of Soldier's Hole. Gun still mounted in 1946.	556160.000000000000	373470.000000000000
1484574		Area of small banks and hollows on shore. Probable post medieval clay pits and associated features.	551900.000000000000	383200.000000000000
1478963		Probable late medieval earthwork ridge-and-furrow.	555908.000000000000	373769.000000000000
1478993	Eothen	World War 2 Headquarters of 12th Battalion Sherwood Foresters in 1941 at house known as 'Eothen', Landseer Avenue.	555880.000000000000	373150.000000000000
1478959		World War 2 hexagonal Type 22 pillbox. Permanently manned forward defence locality.	555700.000000000000	374070.000000000000
1478997		World War 2 Mined Bridge. Category 'A' bridge carrying road over railway, blocked by anti-tank mines.	556000.000000000000	372950.000000000000
1478774		World War 2 hexagonal pillbox on seafront south of Chapel-out-Marsh. Now removed. Identified from aerial photography.	555850.000000000000	374440.000000000000
1483610		Probable post medieval clay pits and associated features (rectangular structures cut by groyne).	551900.000000000000	383400.000000000000
1478955		World War 2 rifle section post to be manned on 'stand to', east of White Horses.	555920.000000000000	374220.000000000000
1479627		Inlet, possible post medieval landing site with large raised banks running inland to join with sea bank. Identified from the 1st edition Ordnance Survey map.	554650.000000000000	377700.000000000000



1484836		Pewter spoon with baluster top of late 16th-century date found in clay on foreshore. The maker's mark is in the form of a gridiron in the bowl.	552200.000000000000	382200.000000000000
1483136		Billy Butlin started construction in 1935, and his first Holiday Camp opened on Easter weekend 1936. It catered for 500 people at a cost of £2.10s per head. The first chalets were timber framed, with an infill of asbestos panels, and the camp was self-co	557200.000000000000	367500.000000000000
913199		POSSIBLE REMAINS OF AMPHIBIOUS VEHICLE - DUKW	558349.000000000000	367792.000000000000
355841		A possible Roman occupation site dated by pottery to the 2nd to 4th centuries with finds of animal bones.	557430.000000000000	368660.000000000000
1483118		Early Iron Age salt working site with briquetage and pottery including some Belgic. Found in 1954 exposed on beach a large amount of briquetage and burnt surfaces found. At TF 5752 6777 early Iron Age salt working site with hearth was exposed after 1953	557470.000000000000	367760.000000000000
1486080	Church Of St Clement	Parish church of 1818-19 with later additions built on a new site after the old church was destroyed by the sea,. Squared greenstone rubble, red brick, slate roofs. 2 stage west tower has a plinth, dentilated eaves course and gabled roof. The pointed wes.	552114.000000000000	380903.000000000000
1483518		Romano-British site exposed in 1948 when finds included a Flavian bowl containing a hoard of coins from Augustus to mid 4th century. 2nd- and 3rd-century pottery also found. Rim of a pot is in Lincoln Museum and described as 'bowl form 29 in the style of	551350.000000000000	384540.000000000000
1479715		Silver denarius, Vickers Point, Ingoldmells in 1953. The coin was minted in Colchester and shows the Emperor Carausius, AD 287-93.	557200.000000000000	369800.000000000000
1479613		Post medieval Signal Staff. Site of signal staff, identified from Ordnance Survey 1st edition map.	553950.000000000000	378800.000000000000
1073800		Possible Medieval or Post Medieval enclosure seen as earthworks.	554530.000000000000	374190.000000000000
355932		A late 3rd century Roman urn was found in 1951. It is now held by Lincoln Museum.	554450.000000000000	377870.000000000000
1483585		During fieldwalking on the site at Seaholme Road, Romano-British pottery and tile was recovered. This could mean that there is a Roman site in the vicinity.	550800.000000000000	383800.000000000000
1477987	Coastal Defence/Chain Home Low Station M58	The site of a Coastal Defence/Chain Home Low (CD/CHL) radar station at Mablethorpe. It was built by the British Army to monitor shipping and aircraft during the Second World War. CD/CHL sites opened from 1941 and comprised a brick or concrete operations	551000.000000000000	385000.000000000000

1484553		Romano British penannular brooch found in 1969 on beach, Trusthorpe.	551900.000000000000	383300.000000000000
1483141		Former holiday chalet built circa 1936, now gardeners' office. Timber frame with asbestos panels, slate roof with overhanging eaves and bargeboards. Single storey, 3-bay front, the projecting gable is corbelled out on timber brackets. This is the last r	557348.000000000000	367252.000000000000
1483267		An area of medieval ridge-and-furrow cultivation identified from aerial photographs.	550700.000000000000	385400.000000000000
355944		Possible Medieval salt works recorded from documentary sources.	556270.000000000000	373320.000000000000
1478678		Medieval / Post Medieval Ridge and Furrow. Ridge-and-furrow/post-medieval ploughing, identified from documentary sources.	556300.000000000000	370300.000000000000
1059708		Probable Medieval or Post Medieval field boundary and enclosures seen as earthworks.	553880.000000000000	376590.000000000000
1480932		Half-follis of Constantine I. Coin, bronze half-follis of Constantine I was found at Ingoldmells point. The coin was struck at Sirmium and dates to 324AD. It appears to be a type commemorating one of the great victories in that year. The reverse reads SA	557400.000000000000	368600.000000000000
1478994		Small square/rectangular, post medieval enclosure (against groynes). Possibly associated with fishing. Identified from documentary sources.	556230.000000000000	373000.000000000000
1479616		Inlet, possible landing site of post medieval date close to signal staff with range of buildings associated with feature. Identified from the 1st edition Ordnance Survey map.	553950.000000000000	378700.000000000000
1479777		Two saltern sites were seen in a ditch circa 2m down and 14 paces apart. Finds include handmade bricks, 9cm or smaller, pans and Iron Age potsherds, some Roman pottery was also recorded.	556300.000000000000	369400.000000000000
1478964		Remains of square pillbox on beach at Soldier's Hole. Rifle section post manned on 'stand to' equipped with anti-tank rifle.	556120.000000000000	373680.000000000000
1478992		World War 2 rifle section post to be manned on 'stand to' . Chapel Point.	556250.000000000000	373280.000000000000
1484919	Wavelands	A very early, important and well-preserved example of a holiday cottage constructed 1901 using two Great Eastern railway carriages at first-floor level. Timber and rendered brick with a plain tile roof and a single brick stack. 2 storey. Entrance front h	552421.000000000000	381518.000000000000
1480946		Iron Age salt working site, producing hand bricks, short rods and Iron Age pottery.	556500.000000000000	368500.000000000000

355962	St Leonards Church	(18th c.) (? on site of 16th c. church). Possible rectangular 'ditched' feature on sand. Possibly a clay pit or a formerly 'walled' feature of post medieval date.	555230.000000000000	372020.000000000000
1486099		Probable post medieval clay pits and associated features (rectangular structures cut by groyne.)	553300.000000000000	380400.000000000000
1483578		Remains of 19th-century fishing vessel, buried in foreshore. Located during survey in 1997.	551650.000000000000	383830.000000000000
1483260		Romano British Saltern. Briquetage, handbricks, pan fragments and one Romano-British pottery sherd was found in newly cut dyke circa 2m down.	550700.000000000000	385890.000000000000
1479785		The sea defence bank known as Roman Bank is thought to be medieval. An east-west ditch of unknown width and length was identified during a watching brief by LAS on construction of a new MacDonalds restaurant in 2000 (EL1192). The ditch is positioned at	556390.000000000000	369280.000000000000
1480943		The site of a Coastal Defence/Chain Home Low (CD/CHL) radar station at Chapel St Leonards. It was built by the British Army to monitor shipping and aircraft during the Second World War. CD/CHL sites opened from 1941 and comprised a brick or concrete oper	557090.000000000000	368550.000000000000
1477998	Coastal Defence/Chain Home Low Station M60	Gold half noble of Edward III Treaty period 1363-9, mint of London.	556500.000000000000	371600.000000000000
1486089		A Second World War bombing decoy site at Huttoft. It was built in March 1942 as a 'Strategic Starfish' site to deflect enemy bombing from the East coast of England. Also in 1942 a 'Strategic QL' decoy was incorporated into the site as part of the 'C-seri	551980.000000000000	380800.000000000000
1469583	Starfish Bombing Decoy Sf51a	Supposed Roman site, now covered by sea defences.	553400.000000000000	377300.000000000000
355847		Rectangular 'walled' enclosures in a line parallel with the shore (some cut by groynes). The features appear to be designed as enclosures and may be post medieval oyster beds or associated with fish farming. Identified from documentary sources.	557440.000000000000	368150.000000000000
1479487		Medieval ridge-and-furrow earthworks on land west of Huttoft Road, Sutton on Sea.	553800.000000000000	379400.000000000000
1486077		Probable medieval earthwork ridge-and-furrow.	551850.000000000000	380970.000000000000
1484542		Remains of small, post medieval, double ended fishing boat buried in beach. Recorded in 1997.	551005.000000000000	383346.000000000000
1483286			551150.000000000000	384820.000000000000

1479451		A watching brief at land off Sea Road uncovered two substantial undated palaeochannels and two undated linear features.	555722.000000000000	371999.000000000000
1486091		Isolated rectangular features on shore. Probable post medieval clay pits.	552900.000000000000	380800.000000000000
1486037		A collection of 12 or so 20th century prefabricated concrete, corrugated asbestos and wood beach huts, of unusual design.	552670.000000000000	381040.000000000000
355853		Roman pottery.	557290.000000000000	367680.000000000000
355850		Iron Age salt-workings, briquetage, pottery including Belgic.	557400.000000000000	367600.000000000000
1479643		Possible post medieval oyster beds. At least 45 sub-rectangular features from TF 570 703 to TF 565 716. The south range of features was a series of 8 large sub-rectangular pits aligned parallel to the foreshore. One of these cut the briquetage layer and	557000.000000000000	370300.000000000000
1483133		An undated earthwork linear feature was identified from Aerial Photographs.	557480.000000000000	367700.000000000000
1478730		Cropmark ditches for possible medieval or unknown date, identified from documentary sources.	555430.000000000000	375350.000000000000
1484586		World War 2 Nissen huts.	551900.000000000000	382900.000000000000
1483573		Probable late medieval earthwork platforms.	551092.000000000000	383997.000000000000
1479793		An undated earthwork linear feature was identified from aerial photographs, probably part of either possible saltern IN22 or Iron Age saltern IN19.	557150.000000000000	369120.000000000000
1486034		Area of Medieval ridge-and-furrow cultivation recorded from aerial photographs.	552400.000000000000	381100.000000000000
1060737		Potential World War II anti-aircraft battery seen as earthworks but now built over.	557220.000000000000	366770.000000000000
1483596		Parish church. 14th century with additions of 1522, 1606, 1842, 1941. Red brick with ashlar dressings, slate roofs. West tower, nave, chancel, vestry. The 3-stage tower of 1606 has stepped corner buttresses, one offset and a battlemented parapet with ash	551400.000000000000	383650.000000000000
1479625		Possible rectangular features on linear alignment. Probable post medieval clay pits. Identified from documentary evidence.	554600.000000000000	377730.000000000000
1486085	Hall Farm	Place name evidence for a hall, possibly of medieval origin.	551930.000000000000	380870.000000000000
1419838		Second World War Type 22 pillbox with large machine gun embrasure South of Ingoldmells, Butlins Holiday Camp, near A52.	557000.000000000000	367700.000000000000
1479496		Small mound. Possible site of a medieval windmill. Identified from documentary sources.	553440.000000000000	379400.000000000000

1479764		Possible post medieval clay pits. Conjoined rectangular features on shore against sea bank. Possible clay pits identified from documentary sources.	557170.000000000000	369580.000000000000
1479806		Early Iron Age salt working site with briquetage, shallow vessels.	557440.000000000000	368870.000000000000
1478968		Medieval ridge-and-furrow. Visible as earthwork in 1996 and 2003. Identified from documentary sources.	555800.000000000000	373550.000000000000
1483583		This site has the slight remnants of part of a ridge-and-furrow field system. Several sherds of 13th-/15th-century pottery were recovered during fieldwalking. This suggests that the site, at least from the medieval period, has been agricultural/pastoral.	550800.000000000000	383800.000000000000
1479769		Iron Age / Romano British Briquetage. A few fragments of briquetage were discovered during the Lindsey Survey at Vickers Point South in a woody peat layer, which probably date to the Iron Age/Romano-British periods.	557200.000000000000	369500.000000000000
1412035		A Royal Observer Corps Orlit post. The remains of the Orlit can be seen lying in the undergrowth on top of the 30' high sea bank on the east side of Anderby Road on the coast path at Chapel St Leonards. There is an steep overgrown path up the bank from t	556140.000000000000	373510.000000000000
1484552		Medieval ridge-and-furrow or post-medieval ploughing.	551700.000000000000	383300.000000000000
1478702		Base of a green glazed medieval pot found at high water mark.	555200.000000000000	376400.000000000000
1478697		Possible World War II bunker, identified from documentary sources.	554800.000000000000	376700.000000000000
1484924	Lindum	A very early, important and well-preserved example of a holiday cottage constructed 1901 using 2 Great Eastern railway carriages. Timber with asphalt roof. Single storey. Entrance front has projecting gabled porch with pantile roof and glazed door. North	552428.000000000000	381498.000000000000
1484843		Site of Sutton Signal Staff on 1824 Ordnance Survey map.	552200.000000000000	382200.000000000000
1479450		Post medieval earthwork. An earthwork survey in 1998 identified a ditch which aligns with linear features recorded by the National Mapping Programme. These features are thought to be of post-medieval date, and may be contemporary with a 'house and homest	555620.000000000000	372000.000000000000
1486028		Medieval ridge-and-furrow, Cade's Field, Sutton on Sea.	552000.000000000000	381100.000000000000
1486093		Work in advance of redevelopment recorded a rectangular enclosure, ridge-and-furrow, ditch and a pit, all of medieval date.	552260.000000000000	380580.000000000000
1478708		Site of a possible Medieval haven or landing, area around modern canalised Anderby Creek bounded by substantial earth banks. The site was found during a walkover survey.	555000.000000000000	376000.000000000000



1478953		Anderby minefield on coast north of Chapel Point between TF 5587 7424 and TF 5580 7445.	555870.00000000000000	374240.00000000000000
1478952		World War 2 concrete anti-tank block on bank east of Anderby Road.	555780.00000000000000	374240.00000000000000
1060743		Potential enclosure of unknown date seen as earthworks.	557550.00000000000000	368040.00000000000000
1486095		Rectangular features (one cut by groyne). Probably isolated clay pits of post medieval date.	553000.00000000000000	380550.00000000000000

(Source: English Heritage. 2009)

# Appendix 5 – 2009 Pro-Forma Consultation Responses

Table 11 - 2009 Pro-Forma Consultation Responses

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
Great Wash Fishing Industries Group	The Great Wash Fishing Industries Group discussed their comments with the Environment Agency at a meeting on 12th May 2009. See Appendix 6.	-	-	-	
English Heritage	Historic environment issues can potentially arise at both ends of the project i.e. there material is got and where it is tipped. Regard should be had to known archaeological features and historic structures and wrecks, also regard should be has to the protection and preservation of strata likely to contain significant archaeological remains. A protocol should be in place for the reporting and recording of unexpected discoveries of historic interest.  The benefits of beach maintenance for historic seaside towns where the beach is a key asset are	You should have in place a protocol for reporting and recording any unexpected discoveries of historic interest made during the course of the proposed works either at the extraction or tipping ends of the job:-  Protocols for reporting unexpected discoveries can be found in the following documents, whilst not directly applicable these should give you an idea of current good practice.  BMAPA (2003) 'Marine Aggregate Dredging and the Historic Environment'. <a href="http://www.wessexarch.co.uk/files/projects/BMAPA-">http://www.wessexarch.co.uk/files/projects/BMAPA-</a>	-	You should consult the Historic Environment Record at Lincolnshire County Council to ascertain the locations of known archaeological features, historic structures, etc.	-

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
	<p>clear both aesthetically and in the commercial viability of businesses and by extension the built environment which they occupy and maintain.</p> <p>Where clay strata is exposed this can lead to significant losses of archaeological features preserved therein. We fully support the protection of the clay strata underlying the sandy beaches.</p>	<p><a href="#">Protocol/BMAPA-EH-Guidance-Note-April-2003.pdf</a></p> <p>COWRIE (2007) 'Historic Environment Guidance for the Offshore Renewable Energy Sector'.  <a href="http://www.offshorewind.co.uk/Assets/archaeo_guidance.pdf">http://www.offshorewind.co.uk/Assets/archaeo_guidance.pdf</a></p> <p>There's also a protocol on the Wessex website.  <a href="http://www.wessexarch.co.uk/projects/marine/bmapa/arch-interest.html">http://www.wessexarch.co.uk/projects/marine/bmapa/arch-interest.html</a></p>			
Ingoldmells Parish Council	-	-	-	-	To provide a response to the Scoping Consultation Document follow council meeting on 8 <sup>th</sup> June 2009.
East Lindsey District Council - Coastal Action Zone	-	-	-	Lincshore Coastal Action Group Mablethorpe and Sutton Chamber Of Trade Skegness Chamber Of Commerce Borne Leisure	Please take account of the views of local businesses.
Lindsey Marsh Drainage Board	No comment – the board is fully supportive of the	The works have considerably reduced the	None	-	A few years ago we had problems with sand getting

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
	works.	volume of spray which used to come over the sea defences and into freshwater systems. The works have also reduced the likely hood of breaches and damage both to property and to the environment is reduced.			into the boards Anderby gravity outfall pipe but that was sorted by raising the air vents.
Huttoft Boat Club	No negative issues experienced (during previous nourishment) in our area. Positives seem mainly the reassurance of comparative safety to local residents.	-	-	-	-
National Farmers Union (NFU)	-	-	-	-	Members were fully supportive of the continuing beach nourishment. Members felt this year's (nourishment) has taken less time, which they felt might mean the exercise was bearing fruits. It was however, pointed out, that accumulations of sand at Skegness and Gibraltar Point were continuing.
Skegness North Shore Holiday	-	There is an ongoing requirement for levelling the deposited sand to minimise	-	-	-

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
Centre		erosion and fill in what soon become dangerous creeks.			
Council for the Protect Rural England (CPRE)	Key concerns for CPRE are that visual qualities of the coastline are conserved, consistent with the needs of defence against flooding. We also would wish to stress the importance of maintaining beaches suitable for the needs of holiday makers and where wildlife interests have been taken into account also. Overall CPRE welcomes the continuation of the beach nourishment strategy.	-	-	-	-
Chapel St Leonards Parish Council	-	-	-	-	No comment
Environment Agency – Planning	No comments to make as the letter indicates you are already aware of the Planning benefits and constraints in terms of amenity/tourism and flood risk etc.	You may be aware that as a result of the Enquiry in Public to the Regional Spatial Strategy for the East Midlands (RSS8) a Study into the long-term sustainability of the coastal settlements is currently being undertaken. The outputs are expected in March 2010 and will be		Debbie Morris, Environment Agency, Development Control (covering the Skegness area), Manby	



Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
Environment Agency – Business User	-	used to inform a review of RSS8. The Study outputs will be an important consideration for the Lincshore project and the long-term strategy that follows may provide further constraints/opportunities for Lincshore.	-		
Lincshore Wildlife Trust	<p>-</p> <p>There is no doubt that beach nourishment must continue on an annual basis for the foreseeable future.</p> <p>The sand dredged from the bed of the north sea is inevitably coarser than residual sand. It should be noted that fine sand is down</p>	<p>There was potential 'opportunities' identified in a consultation document for the Lincshore Coastal Country Park. Lincshore got a paragraph and it was suggested the re-charge scheme could be used as a vehicle to provide sand for dune re-creation along certain reaches. (This suggestion has certain technical shortcomings, for completeness you should be aware of the document.)</p> <p>-</p>	-	<p>Mablethorpe &amp; Sutton Chamber of Trade (MASCOT)</p> <p>At a recent presentation, the issue of sand quality and quantity was a big issue to the local business. The question of compensation for loss of income/business due to disruption caused by the work was also raised.</p> <p>-</p>	-

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
	<p>drifted from Donna Nook and mixers with the coarser nourishment material.</p> <p>Nourishing the back beach to cushion the hard defences produces a high berm with steep seaward slope created by the neap tidal sequence.</p> <p>There has always been wind blow of sand by onshore winds, and is good for those sections where sand dunes are still present behind the walls.</p> <p>The ridge and runnel system on the lower shore moves southward and periodically exposes RIGS sites of submerged forest.</p> <p>No consideration has been given to nourishing the lower shore on the grounds of cost, but there good morphological reasons for doing so.</p>				
Environment Agency – Ecological Appraisal	-	-	-	-	No concerns
Environment Agency –	-	-	-	-	Nothing further to add to

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
Fisheries, Recreation and Biodiversity					previous discussion.
Environment Agency – Development and Flood Risk	<p>Positive: Reducing flood risk from tidal inundation</p> <p>Negative: Potential to increase flood risk from sand migrating into outfalls etc.</p> <p>Land Drainage Consent should be obtained for some elements of the work.</p> <p>If planning permission is required to continue nourishment or other works, a planning application will require the support of a flood risk assessment.</p> <p>Development and Flood Risk have the skill to assist in the preparation of this document and would be happy to have pre-application steer and discussions on the Flood Risk Assessment (FRA).</p> <p>Discussion over SoP provided by scheme would be desirable, although maybe outside realms of Scoping.</p>	<p>If planning permission required and FRA used to support application, opportunities to reduce flood risk as a result of the works will need to be exploited.</p>	<p>No drawing provide to use red line boundary.</p> <p>Main Rivers on landward side, main river outfalls (and the extent of main river which will extend to low water mark on tidal side) need to be treated with care.</p>	<p>Advise discussions with Development and flood risk team over consent issues and specific constraints.</p>	

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
Lincolnshire County Council – Environment	<p>1. The letter contained a good summary of the work so far, issues that have arisen and the proposed future.</p> <p>2. The most important thing in the future will be to coordinate with the work and outcome of the Lincolnshire Coastal Study including the two relevant Shoreline Management Plans.</p> <p>3. Until these are ready, can beach nourishment effectively protect damaged hard defences, e.g. at Mablethorpe-Sutton on Sea?</p> <p>4. How important is it to maintain any downdrift sediment supply rather than sediment of the particle size matching natural deposits? In relation to the expressed objective of Lincshore to maintain a downdrift sediment supply against concerns that have been raised at Gibraltar Point regarding new sediment accretion and its quantity and size, which has risked smothering coarser material</p>	<p>1. In order to preserve visitors' enjoyment of the beaches, perhaps advisory information should be refreshed with respect to reported difficulty in walking, irregularities (dips) in the beaches and wind-blowing of sand generally? Unless this is a very minor concern?</p> <p>2. Those concerned with management of Gibraltar Point nature reserves have previously indicated a wish for more information and co-operation in relation to understanding changes to sedimentation there.</p> <p>3. Opportunities associated with the proposed Coastal Country Park Project?</p>	No further comments	Economic Regeneration Lincolnshire County Council Beech House Waterside South Lincoln LN5 7JH	



Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
	on which some species are dependent. This is one issue the review should take into account.				
Mr Mowbray (Farmer at Anderby)	Re-nourishment is a success, the dunes are building up and there is an increase in grasses particularly around Anderby.	Difficult to improve. Must maintain the line and strength of defences.	Few environmental constraints at present only economic threats if inundation is allowed.		Need to look at as longer term as possible. Implications to local economy and wellbeing would be devastated by flooding.
Skegness Town Council	Members have expressed concerns about the ongoing problems of windblown sand on the prom in Skegness.	Would it be possible to erect hessian fencing to alleviate this problem during the period from October to March/April each year.	-	-	-
Defence Estates					MOD owns beaches which are used as bombing ranges at Donna Nook, Gibraltar point, and Holbeach. They also own a beach at Theddlethorpe which is no longer used as a bombing range. The MOD does not own any beaches within the study area and therefore Defence Estates has no comment regarding the scheme.
East Lindsey District	The continuing good health of the beaches along the		The council would wish to see the proposal		

Organisation	Environmental Issues	Opportunities	Environmental Constraints	Other Organisations to be Consulted	Comments
<p>Council – Planning and Regeneration</p>	<p>coastline of East Lindsey is paramount to the economy of the district. They are a major tourist attraction. Each year, East Lindsey welcomes over 4 million visitors who enjoy approximately 11 million visitor days in the district, spending in excess of £400 million on tourism related activities. It is therefore essential that the Lincshire scheme continues into the future.</p>		<p>continue to pay due regard to maintaining the integrity of the designated areas along the coastline within the project area; namely Huttoft Submerged Forest Site Nature Conservation Importance (SNCI) and Chapel Point – Wolla Bank Site of Special Scientific Interest (SSSI), Regionally Important Geological Site (RIGS) and SNCI, as well as potential impacts on sites adjacent to the coastline that may be affected during works and by windblown sand.</p>		

# Appendix 6 – 2009 Scoping Consultation Document Responses

Table 12 - 2009 Scoping Consultation Document Responses

Organisation	Comments
Lindsey Marsh Drainage Board	<p>Section 2.2.3.2 County Wildlife Sites is a term never used in Lincolnshire, see <a href="http://www.lincsbiodiversity.org.uk/lws_intro.php">http://www.lincsbiodiversity.org.uk/lws_intro.php</a> they were Sites of Nature Conservation Importance (SNCIs).</p> <p>Current ones are Anderby Creek SNCIs, and Moggs Eye Sea Bank Ponds SNCIs.</p> <p>Best to check with <a href="#">LWT</a> as the BAP partnership are constantly working on them</p>
Crown Estates	No Comment
National Farmers Union	<p>The beach nourishment scheme is essential to the economy and the farming of coastal Lincolnshire. It has little adverse environmental effect. This year, local farmers tell report the nourishment has taken less time, which they feel means the exercise is bearing fruit. They also report that accumulations of sand at Skegness and Gibraltar Point are continuing.</p>
English Heritage	Have reviewed the report and are happy that the issues raised in my previous response have been incorporated.
Ingoldmells Parish Council	No comment
<p>Great Wash Fishing Industries Group.</p> <p>Representing:</p> <ul style="list-style-type: none"> <li>▪ Boston and District Fisheries Association</li> <li>▪ Westside Shellfish,</li> <li>▪ Lynn Shellfish Ltd,</li> <li>▪ Boston Fisherman Association,</li> </ul>	<p>Awaiting written comments.</p> <p>As part of the scoping consultation process, a meeting was held between the Environment Agency and representatives from the fisheries industry on 12th May 2009. The representatives, collectively known as the Great Wash Fisheries Industry Group (GWFIG), considers there is a large volume of sand lost annually from the beach/re-nourishment works which is carried into the Wash. Consequently the GWFIG considers that:</p> <ul style="list-style-type: none"> <li>▪ There is a reduction of channel depth where channels (such as Swatch Way and Wainfleet) are filling up with coarse sediment.</li> <li>▪ The weather conditions cause erosion along the coastline, which is carried into Boston. A hill of sand has accumulated at Boston Deep.</li> <li>▪ Shrimp feeding grounds are being suffocated by fine sediment. The loss of suitable shrimp habitat is resulting in the loss of shrimp populations and suitable fishing grounds at Skegness and the Wash.</li> </ul>

Organisation	Comments
<ul style="list-style-type: none"> <li>▪ Lyn Shrimpers Inc.</li> <li>▪ Shellfish / Kings Lynn Fishing Vessel Owners</li> <li>▪ Beryl Shrimp</li> <li>▪ Brancester Safe</li> <li>▪ Kings Lynn Fisheries Cooperative</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dredging is causing the erosion of outer sands at Middle Bank and Wall Pac.</li> <li>▪ The reduction in water depths has reduced the capacity for lee side refuge, for fishing vessels, from weather conditions along the Lincshore coast introducing a health and safety concern.</li> </ul>
<p>Eastern Sea Fisheries Joint Committee</p>	<p>Baseline Information: Section 2.2.3.6 Fish and fisheries</p> <p>Annually updated fishery descriptions and statistics are provided in Annual Reports, available from ESFJC's website, e.g. <a href="http://www.esfjc.co.uk/ANNUAL%20REPORT%202008.pdf">http://www.esfjc.co.uk/ANNUAL%20REPORT%202008.pdf</a></p> <p>Large, sublittoral mussel beds located off Skegness have contained a huge biomass of mussels and supported fisheries during much of 2007 and 2008 (i.e. not restricted to summer).</p> <p>The deeper waters in the mouth of the Wash support a significant edible crab and lobster fishery (most landings are made into Brancester and Wells-next-the-Sea in north Norfolk).</p> <p>The Wash also contains significant populations of the American razor Ensis directus, which has the potential to support a commercial fishery.</p> <p><b>Monitoring issues</b></p> <p>Is it possible to detect any changes in inshore brown shrimp populations or other epibenthic populations that might be induced by beach nourishment activities against the natural variation in background populations?</p> <p>Could the beach nourishment programme in any way affect the sublittoral mussel beds off Skegness (or the opportunities to harvest this resource)?</p> <p>Is there any possibility of cumulative effects or in-combination impacts of the Lincshore beach nourishment programme occurring with effects of offshore wind farm construction or operation off the Lincolnshire coast? If so, these should be considered in the Environmental Impact Assessment.</p> <p>ESFJC has recently been made aware of concerns amongst members of the fishing industry that Lincshore nourishment activities could be adversely affecting the brown shrimp fishery in the northwest part of The Wash. It has been suggested that sediment carried down from beach nourishment areas is filling in natural seabed depressions inside of and offshore from the Outer Dogs Head sandflat, resulting in an</p>

Organisation	Comments
	<p>alteration of the habitat. Is there any monitoring of sediment transport to the south of the nourishment area (south of Gibraltar Point) to provide clarification on this?</p> <p><b>Consultation</b></p> <p>(For clarification) Eastern Sea Fisheries Joint Committee is an autonomous local authority (public body) responsible for the management of inshore fisheries. The Joint Committee does not represent the fishing industry, but has a responsibility for the fisheries resources themselves, for the benefit of commercial, recreational and environmental interests.</p> <p>It might be useful to specify which "fishing organisations" (p.25) have been consulted.</p> <p>It might be useful to consult with recreational angling groups in addition to any commercial fishing associations.</p>
Environment Agency – Planning Liaison	No comment
Environment Agency – Ecological Appraisal	<p>The document is really good, - a shining example of how these things should be done {highly readable!}, - compliments to all concerned.</p> <p>Perhaps we all focus on the re-charge, and don't give as much attention to the dredging element, as perhaps we should, but I don't think this is a major issue.</p>
Lincolnshire Tourism	No Comment
Lincolnshire Wildlife Trust	<p>Recycling: define surplus and identify areas. Gibraltar Point is the final recipient of nourishment material. Question of recycling (actually first mooted when Lincshore scheme launched) requires further study and discussion with the Trust.</p> <p>SCD Section 2.2.2.1</p> <p>para 1: alignment of coast Ingoldmells to Donna Nook is NNW not NW.</p> <p>para 2: substrate includes peat and submerged forest.</p> <p>para 3: question statement re sediment feed to Donna Nook. see DN Robinson. The North-East Coast Lincolnshire: a study in coastal evolution (MSc thesis University of Nottingham 1956) DN Robinson Coastal Evolution in North-East Lincolnshire (East Midland Geographer 5 1/3 1970 62-70)</p> <p>para 4: sediments ARE coarser (x4).</p> <p>SCD Section 2.2.2.2</p> <p>para 4/5: an inadequate explanation, particularly in understanding the changes at Gibraltar Point which are the result of nourishing beaches to</p>



Organisation	Comments
	<p>the north.</p> <p>para 6: ref to erosion south Skegness: this related to the problem of Lagoon Walk (see DN Robinson report of effects of erosion at Lagoon Walk on Gibraltar Point SSSI and NNR May 2006.)</p> <p>There is a need to identify the cause(s) of erosion hotspots. Urgent research required.</p> <p>SCD Section 2.2.11</p> <p>para 6: sites of wrecks on shoreline ARE known.</p> <p>SCD Section 2.2.12</p> <p>para 4:Hutfoft Car terrace does NOT allow cars to park on beach.</p> <p>SCD Section 2.2.13 Timber groynes: while questioning the wisdom of removal, the Trust would be very grateful to receive removed timbers for use in nature reserve management (not at Visitors centre). Point of delivery to be arranged.</p> <p>SCD Section 2.3 The Trust can supply information required in bullet points 2 and 3.</p> <p>There are down drift effects (not just potential)</p> <p>SCD Section 4. para 1: Discussion required with Trust and Lincolnshire BAP Partnership.</p> <p>Fig 10: Coastal processes - simplified and misleading</p> <p>Photo 2: Any mechanical profiling will soon be adjusted by wave action!</p>
Environment Agency – Development and Flood Risk	<p>Comments provided in our Pro Forma Consultation Response, nothing further other than to reiterate:</p> <p>Care / consideration should be given regarding the potential for sand to block Main River outfalls.</p> <p>Consider Flood Defence Consent requirements under the Land Drainage and Sea Defence Byelaws.</p> <p>If Planning Permission is needed a Flood Risk Assessment will be required.</p>
Mablethorpe and Sutton Chamber of Trade	<p>We challenge the statement referring to Mablethorpe on page 13, section 2.2.4 – first bullet point ‘There is an area of open space to the landward side of the seawall’. There are many buildings on or directly behind the seawall so its survival in the current location is vital.</p> <p>Also in this bullet point, the Haven and Trustville sites border the north and south of Mablethorpe and the busy town centre provides for the local and the tourist communities.</p> <p>Please also note that “the Dunes entertainment centre” you mention is no longer there – it is now a privately run enterprise and as such should not be mentioned specifically in your document</p>

Organisation	Comments
	<p>A more important point is that on page 14 you state that each caravan park is considered as a single business. Looking at an aerial photo of Mablethorpe, Sutton and Trusthorpe shows a massive number of static caravans. Most of these are privately owned and are lived in for 6 to 10 months a year usually by retired couples. This accounts for a massive number of part time residents who contribute to the local economy significantly and would suffer massively if a flood occurred. To count each park (some of which have several hundred caravans) as a single business is misleading the reader as to the amount of property, economic activity and human life at stake.</p> <p>Also on page 14 regarding footpaths and promenades – these start at the north end of Mablethorpe, not at Trusthorpe.</p> <p>Page 15 – the RNLI lifeboats at Mablethorpe are operational throughout the year, albeit they are busiest during the summer months.</p> <p>Staying within the confines of the scoping document MASCO’s concerns as follows.</p> <ol style="list-style-type: none"> <li>1) MASCO’s primary concern is that the coast line remains defended, so in that context we broadly welcome the beach replenishment and the current methods and monitoring systems you have outlined seem suitable for the task.</li> <li>2) Beach quality. Our towns rely heavily on tourism which in turn relies heavily on the quality of the beaches. Your document acknowledges that sand quality has reduced (page 6, section 2.2.2.1 – final paragraph) and this remains a commonly expressed concern of our members. Perhaps just the heavily used areas of the beach could be treated to a finer grade of sand?</li> <li>3) Water quality is another very important factor for a seaside resort and perhaps even more critical as the assessments are published. Nobody has suggested that the current practice harms water quality and your studies seem to bear this out, but it must remain a primary concern.</li> <li>4) Beach closure. The current schedule see’s the work arrive at Sutton, Trusthorpe and Mablethorpe just as the beach is beginning to be used by holiday makers. Many beach front businesses only have a few weeks to make their living – and that can further be reduced to almost a few days as the truly good days rely on a school holiday combining with day long good weather. If a cafe overlooks a building site for 3 days over the sunniest bank holiday weekend of the year then that will be a significant blow to his/her business. Worse still, it’ll be back at the same time the following year! If the whole process could take place slightly earlier in the year this would cease to be an issue. We would never consider digging up the high street or decorating a hotel when holiday makers are going to be around so why do we turn the beach into a building site?</li> </ol> <p>The very peak times for the traders on the beach are July through to beginning of September, with June also being busy most of the time. In addition, weekends in May and September can also be very busy (weather permitting).</p> <ol style="list-style-type: none"> <li>5) Sustainability. We have already heard during MASCO conference presentations earlier this year that the cost of replenishment has risen dramatically. Note that according to the figures on page 18 the country has between 12.5 and 15 years supply of marine aggregate left within existing licensed areas assuming current levels of use (why are we shipping a commodity we need to defend our land abroad and what will be the cost of importing it in the future?). As business people our members first reaction to the beach replenishment is always a feeling that spending so much money every year can’t be sustainable and that surely something like an off-shore reef would be a more economically sound solution whilst creating a safer and more pleasant environment for the beach users.</li> </ol>

Organisation	Comments
Environment Agency – Ecological Appraisal	No objection to the continuation of beach re-nourishment along the agreed frontage and support the continuation of the current environmental monitoring regime.
East Lindsey District Council – Regulatory Services	The Scoping Consultation Document is clearly well thought out and the proposals for beach renourishment to protect the coastline and the community are welcomed. On that basis, there do not appear to be any further issues which are in need of inclusion.

## Appendix 7 – Fisheries Data

Fisheries data, taken from the Eastern Sea Fisheries Annual Reports, which shows the annual landings of brown shrimp, cockles and mussels for the Wash from 1983 to 2008, is given in Table 14 and shown graphically in Table 13.

### Data Sources:

- Nourishment Volumes: Halcrow. 2008. Lincshore Nourishment: 2008 Recharge campaign. Site Supervision Report.
- Shrimp, Mussel and Cockle Data: Eastern Sea Fisheries Annual Reports 1993-1995 and 2004-2008. Tables relating to landing of major species in the Wash.

Table 15 illustrates the epibenthic fauna discussed in Section 2.2.3.1 of this report.

Table 13 - Graph showing the annual landings for the Wash of Shrimp, Mussel and Cockles shown against beach nourishment volumes, 1983-2008

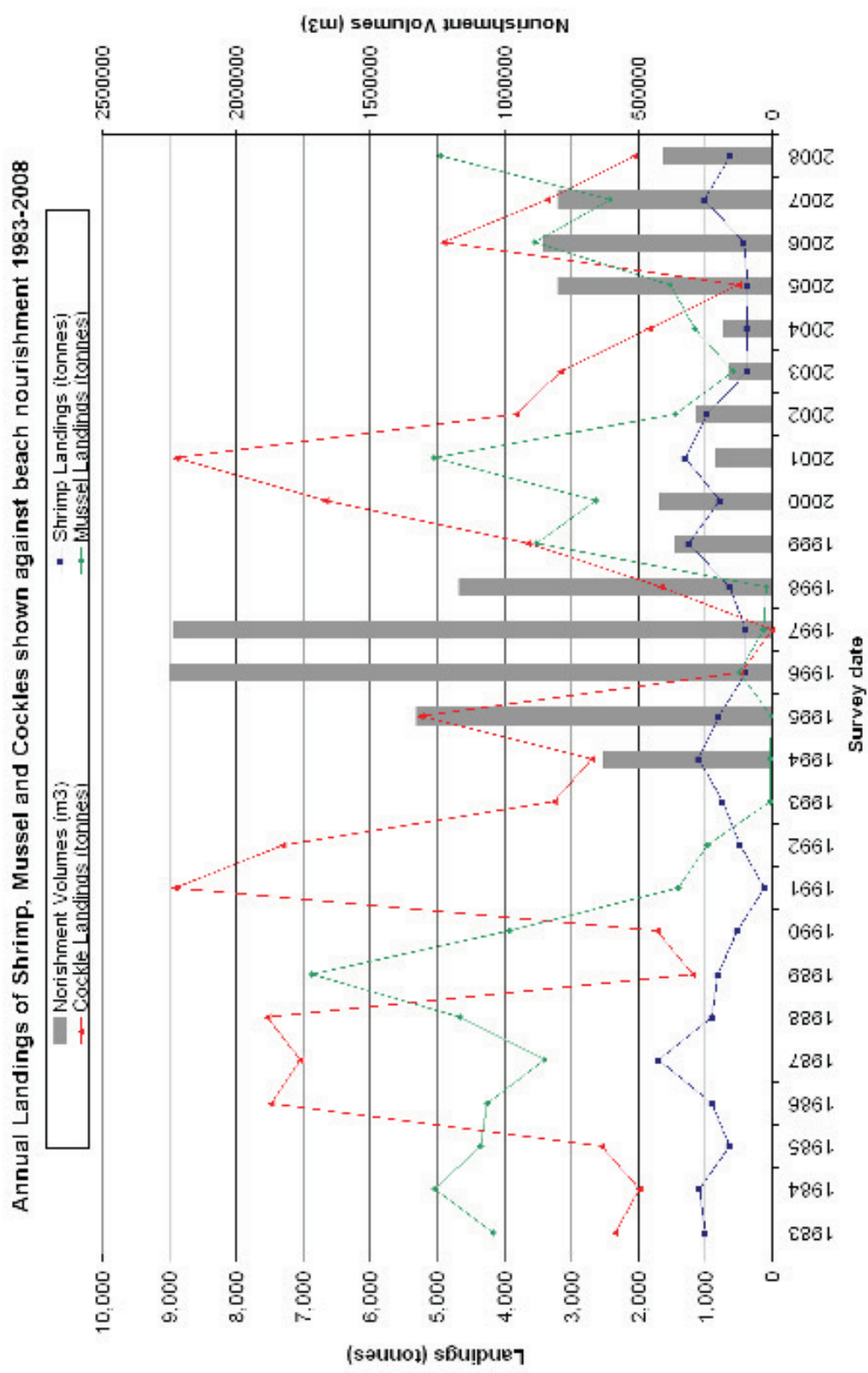


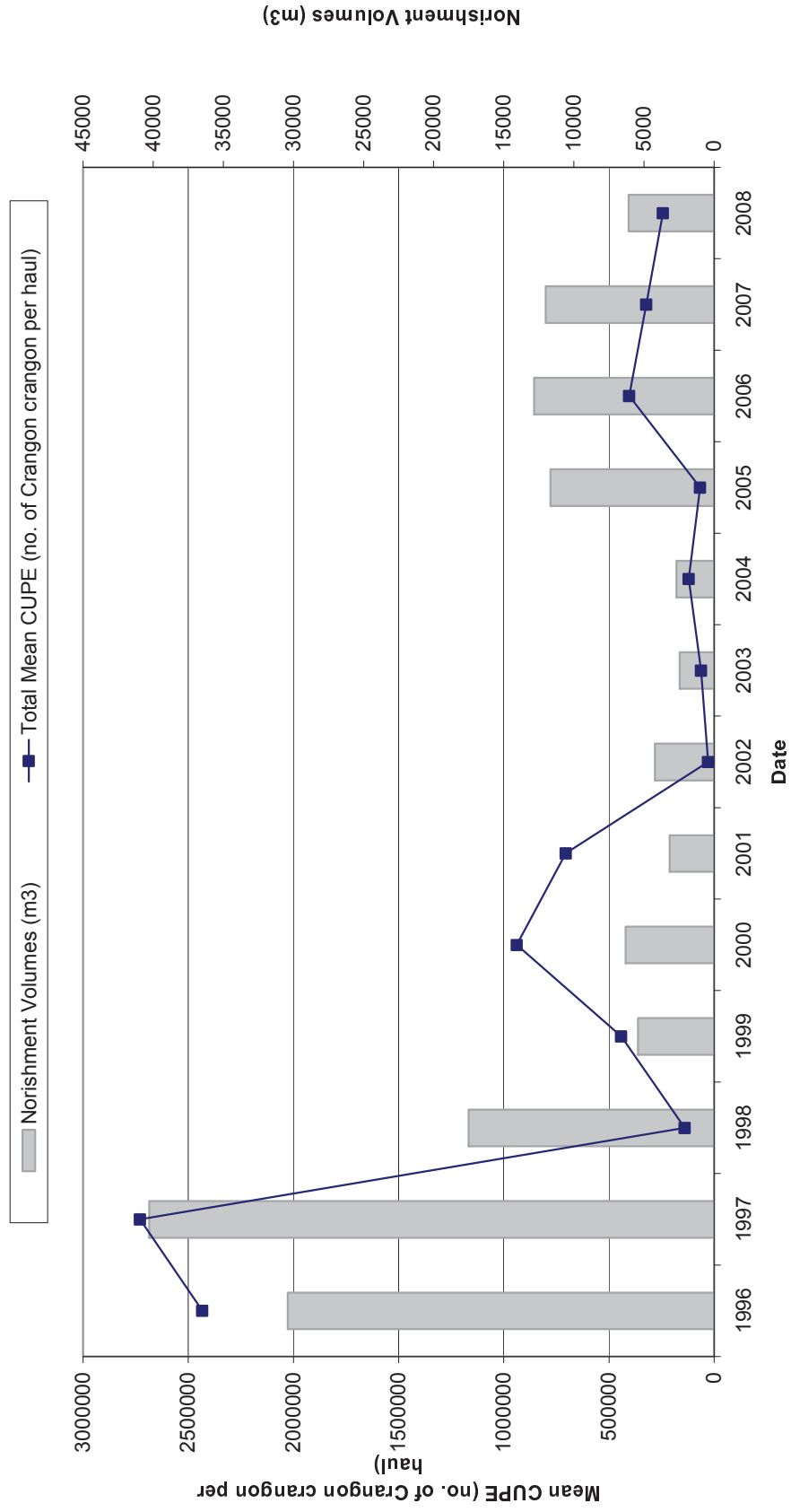


Table 14 - Annual Landings of Shrimp, Mussel and Cockles shown against beach nourishment 1983-2008

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Nourishment Volumes (m3)	0	0	0	0	0	0	0	0	0	0	0	63000	13281	22488
Shrimp (Crangon crangon) Landings (tonnes)	996	1,084	635	899	1,690	901	809	515	114	475	743	1,098	803	389
Cockle Landings (tonnes)	2,343	1,979	2,541	7,487	7,046	7,537	1,192	1,720	8,911	7,302	3,256	2,696	5256	467
Mussel Landings (tonnes)	4,165	5,038	4,356	4,258	3,407	4,661	6,872	3,923	1,404	971	33	25	21	492
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		
Nourishment Volumes (m3)	223683	116799	362488	420385	211626	281774	163498	179285	800232	855305	800232	405943		
Shrimp (Crangon crangon) Landings (tonnes)	396	630	1249	786	1302	968	366	383	363	422	1020	625		
Cockle Landings (tonnes)	0	1668	3652	6666	8901	3827	3151	1837	503	4906	3353	2049		
Mussel Landings (tonnes)	126	80	3,515	2,627	5,046	1,446	580	1,160	1,515	3,550	2,414	4,948		

**Table 15 – Environmental Monitoring: Total Volumes of shrimp hauls shown against beach nourishment 1996-2008**

**Environmental Monitoring: Total volumes of Shrimp populations shown against beach nourishment 1996-2008**



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