



# Clacton and Holland-on-Sea PAR

Environmental Baseline Review

January 2013  
Tendring District Council

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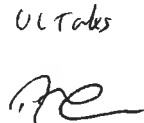
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# Executive Summary

Tendring District Council is developing a long-term (100 year) plan for managing flooding and coastal erosion at Clacton and Holland-on-Sea in Essex. Mott MacDonald have been appointed by Tendring District Council to develop a Project Appraisal Report (PAR) to assess options for upgrading or changing the sea defences in order to manage coastal erosion and reduce flood risk across the frontage.

This baseline review provides a summary of previous studies and reports, and incorporates the findings of a site walkover, carried out by a marine ecologist in August 2012. The Clacton and Holland-on-Sea frontage is a busy recreational area and the coastline is dominated by shingle beach, groynes, seawall and a promenade. The beach itself is a highly mobile sand and gravel habitat with little vegetation and few animal species present. There are no statutory ecological protected areas located within the central Clacton and Holland-on-Sea study area.

The UK BAP maritime cliff and slope habitat is present at the site. The proposed works are being implemented in order to prevent coastal erosion and therefore should prevent future losses of this valuable habitat.

Sublittoral sands and gravels are present along the frontage, however this habitat is likely to support only a patchy distribution and relatively low diversity of fauna. Implementation of the plan should ensure that beach sediment stability is maintained/increased which will maintain/improve the habitat.

Protected, rare and endangered flora and fauna species may be present along the coastline. However, fish species are considered able to move away from disturbances, and benthic species of note are not expected to be found at the project site in significant numbers. Only if the vegetated cliffs are to be altered by the plan, are any botanical species likely to be affected.

The coastline is used by residents and tourists for a range of commercial and recreational activities. The interests of such communities should be taken into account when considering the options for the coastal defences.

There are a number of statutory designated sites within two kilometres of the study area, such as Holland Haven Marshes SSSI and LNR, the Outer Thames Estuary SPA and the Essex Estuaries SAC. However, the potential for environmental effects on the protected areas close to the project area are limited because

disturbance during construction caused by the proposed scheme will be short-term and localised. If large-scale changes to the frontage are proposed and an Environmental Impact Assessment is required, it is recommended that long-term changes to the sediment regime are considered in relation to the Holland Haven Marshes designated site, and any offshore benthic habitats. Consultation should continue with Natural England during the optioneering process to ensure that changes to the defences are environmentally acceptable and to discuss the need for any mitigation and/or compensation.

There are a number of historic listed buildings and conservation areas within close vicinity of the proposed works. Although the historic assets will not be directly affected by proposed works, indirect affects should be considered when planning construction works.

# 1. Introduction

Tendring District Council (TDC), is developing a long-term (100 year) plan for managing flooding and coastal erosion at Clacton and Holland-on-Sea in Essex. The existing cliffs, promenade and pier are under pressure from erosion caused by falling beach levels and wave attack. Mott MacDonald (MM) have been appointed by TDC to develop a Project Appraisal Report (PAR) to assess options for upgrading or changing the sea defences in order to manage coastal erosion along the frontage.

## **1.1 Purpose of this report**

This report provides a summary of previous marine and coastal studies which have been carried out in earlier stages of developing the Environment Agency's plan. It also incorporates the results of a site walkover and desk study. This report will be used to inform coastal defence options. The objectives of this report are to:

- Identify any relevant environmental or cultural heritage legislation which may affect any works on the coastal defences.
- Identify any assets of environmental or ecological value that might be affected by coastal erosion or works on the coastal defences;
- Identify any sites of archaeological or cultural heritage importance that might be affected by coastal erosion or works on the coastal defences.

## **1.2 Study area**

The study area for the marine ecology baseline is the coastal frontage from Holland-on-Sea at the northern end, past Clacton Pier and extending to the southern end of Clacton (Figure 1.1). Habitats within 500m of this frontage have also been considered. Designated site information has been reviewed for this area and for two kilometres along the coast to the north and south.

A busy recreational area, the Clacton and Holland-on-Sea coastline is dominated by a combination of sand and shingle beaches, groynes, seawall and promenade. The beach itself is a highly mobile sand and shingle habitat with little vegetation and few animal species present. This area of coast is not of national or local conservation importance.

There are commercial fisheries in the area and recreational fishing takes place from the beach. Private and commercial properties are located behind the seawall including a sailing club and a number of cafes. The pier, beach huts and the beach itself are used by tourists. The proposed works aim to protect and enhance these residential and tourist areas along the frontage.

Figure 1.1: The study area of Holland-on-Sea and Clacton



Source: Clacton and Holland-on-Sea Plan SEA (Environment Agency, 2009)

### 1.3 Legislation and policy

Environmental legislation which is relevant to this study and which has been considered in this report is listed below:

- Water Framework Directive;
- Wildlife and Countryside Act 1981, as amended (WCA);
- Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (Habitats Directive);
- The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations).

Policy which is relevant to this study and which has been considered in this report includes:

- National Planning Policy Framework;
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services;
- UK and Local Biodiversity Action Plans (BAP);
- UK Post-2010 Biodiversity Framework;
- Tendring District Council Local Plan.



Statutory designated sites include:

- Sites of Special Scientific Interest (SSSIs), which are protected under national legislation (WCA, 1981);
- Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are sites of European importance, which form part of the Natura 2000 network;
- Ramsar Sites are wetlands of international importance as defined under the Ramsar Convention;
- Local Nature Reserves (LNRs) are statutory designated sites of local importance.

It is important to note that for European designated sites (i.e. SPAs and SACs) Habitats Regulations Assessments are required where the plan or project is likely to have a significant effect on the interest features.

#### **1.4 Previous studies**

A number of previous environment reports have been produced for the frontage of Clacton and Holland-on-Sea. A Strategic Environmental Assessment (SEA) and Scoping Report (Environment Agency, 2009a) have been completed which review the environmental baseline and marine processes in the area. Following this, a Water Framework Directive (WFD) Assessment (Environment Agency, 2009b) was carried out which assessed the potential impacts of the scheme on the objectives of the WFD. A Habitats Regulations Assessment (HRA) (Environment Agency, 2006) was carried out to assess the likely impacts of the plan on the European designated sites in the area.

#### **1.5 Consultation**

The Environment Agency consulted with Natural England on the Clacton and Holland-on-Sea Draft Plan. Natural England (2012) responded stating that the proposal was likely to lead to an environmentally acceptable solution, and that an HRA would not be required (although an HRA had previously been carried out in 2006). Natural England commented that any effects on the Clacton Cliffs and Foreshore SSSI should be investigated. This site is designated for its geology and not its ecology.

## 2. Marine and coastal environment

### 2.1 Designated sites

There are a number of statutory designated sites within two kilometres of the study area, as described in Table 2.1: Designated sites within two kilometres of the study frontage and shown in Appendix A. Holland Haven Marshes SSSI and LNR lie immediately north and west of the study frontage, where Holland Brook enters the North Sea. The Outer Thames Estuary SPA and Essex Estuaries SAC are to the south of the study area. Clacton Cliffs and Foreshore SSSI is situated within the study site frontage and is designated for its geological rather than ecological features. While Picker's Ditch Meadow LNR is located within two kilometres of the frontage, it is well inland of the study area and so not included here.

Table 2.1: Designated sites within two kilometres of the study frontage

Site name	Importance	Distance and direction from frontage	Main features
Holland Haven Marshes SSSI	National	0km NW	Saltmarsh, grazing marsh, ditches
Holland Haven Marshes LNR	National	0km NW	Saltmarsh, grazing marsh, ditches
Outer Thames Estuary SPA	International	0.3km S	Estuary, open sea
Essex Estuaries SAC	International	1.5km SW	Estuary, mudflat, sandflat, Atlantic salt meadows
Clacton Cliffs and Foreshore SSSI	National	Within frontage	Pleistocene interglacial deposits, fossil remains

In a similar location to Holland Haven Marshes SSSI and LNR, is Holland Haven Country Park. There is also a recommended Marine Conservation Zone (MCZ) to the south of the study area, which incorporates the Blackwater, Crouch, Roach and Colne estuaries, however this is approximately 5.5km from the study area and so not considered here.

An HRA was carried out by the Environment Agency to assess the likely impacts of the scheme on the Colne Estuary SPA and Ramsar site, Hamford Water SPA and Ramsar site, Outer Thames Estuary SPA and Essex Estuaries SAC. The HRA concluded that *“Due to the distance of the area of works from the designated sites and the presence of a barrier for sediment movement at Jaywick, no significant effects are considered likely to affect any European (or internationally) designated sites”* (Environment Agency, 2006).

### 2.2 Water quality

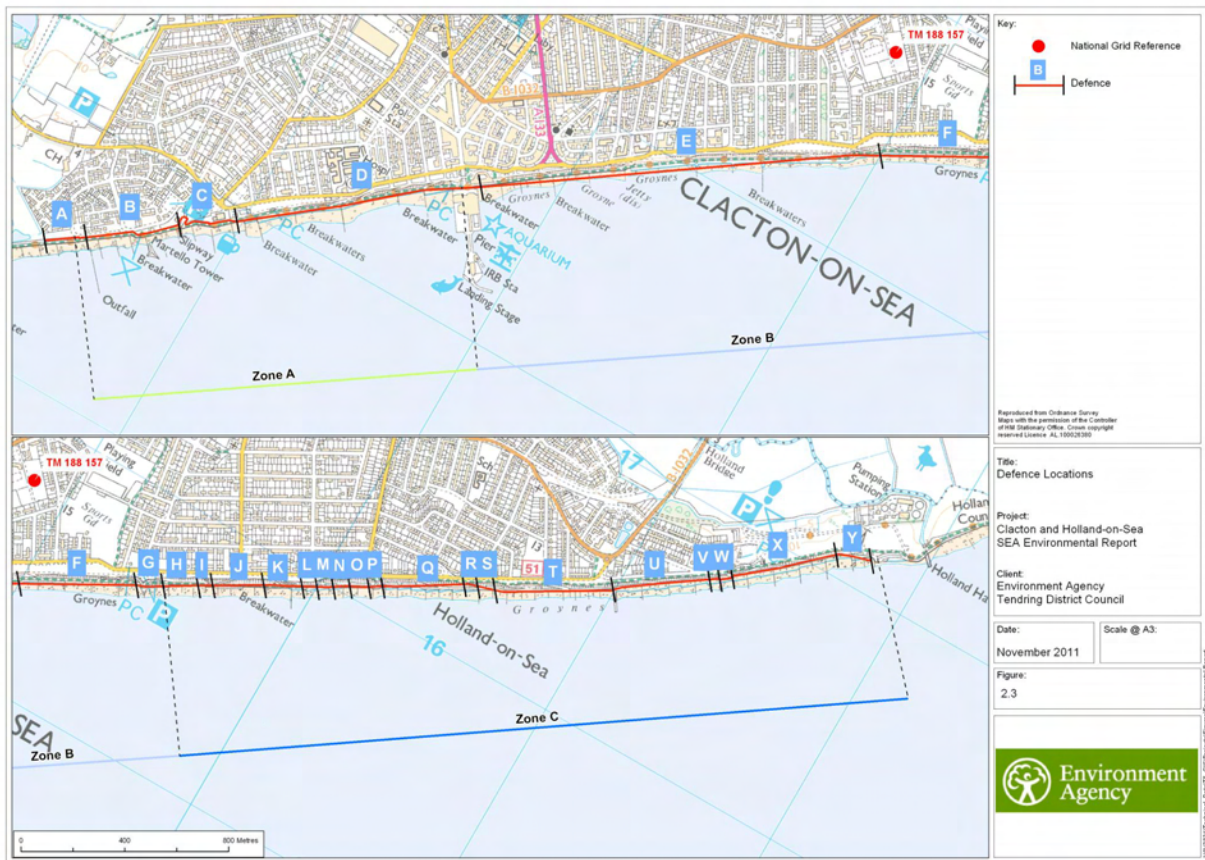
Within the study area, there is one coastal water body – Essex (GB650503520001), which is within the Anglian River Basin District. It is classed as Heavily Modified, with a Current Ecological Quality of Moderate Potential and a Current Chemical Quality of Good. The WFD Assessment (Environment Agency, 2009b) assessed the potential impacts of the plan on the Essex coastal water body. It was concluded that the coastal defence scheme would not cause deterioration in the status of the water body or of any surrounding water bodies, and that it would not prevent the implementation of mitigation measures identified in order for it to achieve Good Ecological Potential.

### 2.3 Marine ecology

A site walkover was carried out on 13 August 2012 by Bryony Townhill (an Environmental Scientist from Mott MacDonald with specialist knowledge of marine environments), of Zones A to C (Figure 2.1). The

length of the study area was walked between high tide and low tide and all marine and coastal habitats observed were recorded. Although the scope of the PAR includes only Zones B and C, Zone A was included in this environment assessment as it includes environmentally designated areas and therefore any works will need to consider the effect on this adjacent area.

Figure 2.1: The study frontage is split into Zones A, B and C



Source: Clacton and Holland-on-Sea Plan SEA (Environment Agency, 2009)

The beach within Zone A was gently sloping comprising sand and shingle. This was backed by the man-made promenade with buildings and gardens behind. Separating Zones A and B is Clacton Pier which extends out into the sea on piles. Zones B and C were very similar to each other, with a sand and shingle beach (Zone B is mainly sand beach and Zone C is mainly shingle), which in areas was steeply sloping, with groynes and breakwaters, backed by sea defences, a promenade and a sloping vegetated cliff.

**2.3.1 Sand and Gravel Habitats**

The intertidal area is a fringing shingle beach habitat, dominated by sand and gravel. The beach at Clacton and Holland-on-Sea is exposed to wave action and is exposed to high levels of human activity. It is therefore unlikely to support large amounts of vegetation or significant invertebrate communities. Shingle beaches are used by birds, such as little terns (*Sterna albifrons*), ringed plovers (*Charadrius hiaticula*) and lesser black-backed gulls (*Larus fuscus*) as nesting sites. However this area is heavily used by tourists and

dog walkers, and at high tide, very little or no shore is left exposed. Therefore it is highly unlikely that these birds nest along this frontage.

### **2.3.2 Maritime Cliffs**

Maritime cliffs and slopes are present within the project site although they are protected by sea defences. They are cliffs with vertical or sloping faces which have slipped due to coastal erosion (UK BAP, 2009a). Around the UK, there are approximately 400 km of this habitat. The cliffs in Zone A are designated under the Clacton and Foreshore Cliffs SSSI.

### **2.3.3 Maritime Flora**

A site visit (August 2012) identified various maritime species present within the study site:

- Brown seaweed - brown seaweeds are the most common type of seaweed found on rocky beaches. They normally have a method to strongly attach themselves to rock surfaces. The piles at Clacton Pier were observed to support various species of brown seaweed.
- Egg wrack (*Ascophyllum nodosum*) - A common large brown seaweed, dominant on sheltered rocky shores (Hill and White, 2008). Egg wrack was observed growing on the piles at Clacton Pier in Zone A and in Zones B and C growing on the groynes, rock sea defences, wave walkers (concrete sea defences) and breakwaters.
- Green seaweed (*Ulva intestinalis*) - This green seaweed is found globally and is common on all coasts of Britain and on a variety of habitats in all intertidal areas. It is highly intolerant to substratum loss and smothering, but tolerant of turbidity and suspended sediment changes (Budd and Pizzola, 2008). Green seaweed was observed growing on the piles at Clacton Pier in Zone A and in Zones B and C growing on the groynes, rock sea defences, wave walkers (concrete sea defences) and breakwaters.

Botanical species were recorded along the vegetated cliff and included:

- Common reed (*Phragmites australis*)
- Broom (*Cytisus scoparius*)
- Sea beet (*Beta vulgaris*)
- Sea purslane (*Atriplex portulacoides*)
- Golden samphire (*Inula helenium*)
- Gorse (*Ulex sp.*)
- Hebe sp.

### **2.3.4 Maritime Fauna**

A site visit (August 2012) identified various maritime fauna present within the study site:

- Native oyster (*Ostrea edulis*) - Found in the eastern Atlantic Ocean and Mediterranean Sea, this oyster is widely distributed around the British Isles, although less common on the east coast. The oyster lives on a variety of substrates from bedrock and boulders to mud, in coastal and estuarine waters from the lower eulittoral to sublittoral zones. The oysters are tolerant of turbidity and suspended sediment changes but intolerant of substratum loss and disturbance (Jackson, 2007). Growth of native oysters were observed on the groynes in Zones B and C at low tide.
- Only one bird species was seen during the site visit on, the black-headed gull (*Chroicocephalus ridibundus*).

The SEA reports that grey seals (*Halichoerus hrypus*) breed at Hamford Water and that there have been sightings of harbour porpoises (*Phocoena phocoena*) along the coast. are spawning grounds for Atlantic cod (*Gadus morhua*) and sand eels (*Ammodytes marinus*) along the frontage.

- The wider area including the Thames and Colne Estuaries provide spawning and nursery areas for sole (*Solea solea*) and herring (*Clupea harengus*). There are also low intensity spawning grounds for Cod along the Clacton frontage. In addition there is an inshore lobster fishery (*Homarus gammerus*). Parlour pots are laid in both shallow and deeper waters along the frontage (Environment Agency, 2009a).

## 2.4 Ecological constraints - notable habitats

There are no habitats in the study area listed under the Habitats Directive. The UK Biodiversity Action Plan has now been succeeded by UK Post-2010 Biodiversity Framework, however UK BAP priority habitats are relevant to note as they are those which are most threatened and require conservation action within the UK. Maritime cliff and slope, sublittoral sands and gravels and coastal saltmarsh are UK BAP priority habitats. There are no coastal or marine Essex Local BAP habitats in the study area. The Biodiversity Framework does not refer to specific habitats but instead provides a mechanism for UK national governments to support reducing biodiversity loss and safeguard ecosystems.

Maritime cliff and slopes are present along the frontage of Units A and B. Holland Haven Country Park is also recorded by Magic (Magic, 2012) as being maritime cliff and slope habitat. This habitat is influenced by salt spray from the sea and can support many plant and invertebrate species. The habitat is threatened by coastal erosion among other influences, as they are vulnerable to erosion and under cutting. Where present along the study area, this habitat is affected by coastal defence which can reduce cliff-top vegetation.

Sublittoral sands and gravels are present in the study area below low tide and these can support a wide range of species. Physical disturbance such as creating or altering sea defences and creating marinas or ports, can affect these sands and gravels and alter the species which can be supported. The UK BAP objective for this habitat was to protect its extent and quality. While this habitat is present, the SEA states that the offshore sediments have only a patchy distribution of fauna of a relatively low diversity due to strong currents and wide temperature ranges (Environment Agency, 2009a).

There is saltmarsh present at Holland Haven to the north of Zone C. This is a vegetated intertidal habitat which dissipates wave energy and so reducing erosion risk elsewhere. Areas of saltmarsh are likely to be affected by sea level change and coastal squeeze as they can not naturally migrate inland due to man-made developments. The saltmarsh at Holland Haven is out of the study area and unlikely to be affected by minor changes to the sea defences particularly as an assessment of the local coastal processes suggests very little sediment movement along this part of the frontage. However, it is suggested that sediment modelling will be carried out during detailed design stage.

## 2.5 Ecological constraints - notable species

Oysters, likely native oysters, were recorded growing on groynes in the study area. Native oysters and native oyster beds in the Greater North Sea are included in the list of Threatened and/or Declining Species and Habitats under OSPAR Annex V due to a huge decline in numbers as a result of overfishing, poor water quality and competition with non-native oyster species. Management measures for the species include fishery regulation, disease and non-native species control and habitat maintenance. The native oyster is also a Priority Species in the UK BAP. Current actions include managing fishing, preventing the spread of diseases and reducing tri-butyl tin (TBT) levels in the marine environment. The species is

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unlikely to be found in significant numbers at the project site and any disturbance will be short-term. Individual oysters which are growing on the current sea defences may be destroyed by the plan, but new individuals are likely to colonise new structures in the medium term. No oyster beds are known in this area.

Atlantic cod is listed as Vulnerable in the IUCN Red List of Threatened Species (Sobel, 1996) meaning it is a threatened species which faces a high risk of extinction in the wild. It is also on the OSPAR Annex V list of Threatened and/or Declining Species and Habitats with the North Sea stock described as being outside safe biological limits in Region II (Greater North Sea) and is at risk of collapse unless fishing pressure, the species' main threat, reduces significantly (OSPAR, 2008). Atlantic cod are also included in the UK BAP grouped plan for commercial marine fish as a number of stocks are at risk of collapse. Although Atlantic Cod may be present within the study area, fish species are expected to move away from any disturbances such as noises during construction works. Therefore, the disturbance to these species is likely to be minimal.

## 3. Coastal Resource Use

### 3.1 Fisheries

The wider area is an important inshore fishery for the European lobster (*Homarus gammarus*). Inshore vessels from Harwich, Walton-on-the-Naze, Point Clear and Brightlingsea lay parlour pots along the Clacton frontage, either in shallow water or deeper water off the nearby shelf.

Line fishing occurs at Clacton Pier, with Whiting, Pouting, Codling, Rockling and Bass catches recorded (The Clacton Pier Company, accessed 2012).

### 3.2 Coastal Development

The promenade runs behind the beach for the length of the proposed works from the Clacton Pier to Holland-on-Sea. There are a variety of coastal defences in place in front of the promenade including groynes, wave walkers and breakwaters. In addition, several areas of the maritime cliffs landwards of the promenade are protected from erosion through coastal defences.

### 3.3 Archaeological Importance

The Martello Tower E and Martello Tower F are both situated within Zone A and are Grade II listed buildings (Environment Agency, 2009b). These towers are situated on the promenade and therefore any large construction works adjacent to Zone A would need to consider any potential impact on these buildings.

The Clacton Cliffs and Foreshore SSSI also has historic interest owing to its fossil remains and archaeological interest of the internationally-significant Clactonian Industry (evidence of early tool-making) (Environment Agency, 2009b).

There are also additional historic assets situated landward of the promenade and maritime cliffs (Environment Agency, 2009b):

- Clacton Seafront Gardens are a Grade II Registered Park and Garden and there are some residential gardens north of Marine Parade East designated under the Local Plan as “garden areas of special character”.
- Clacton Seafront, designated for its special historic and architectural interest, includes the Pier, Seafront Gardens and many surviving seafront buildings.
- A number of listed buildings situated along Marine Parade.

Although these buildings are unlikely to be affected by the proposed works, indirect effects on the buildings will need to be taken into consideration.

A number of sites offshore from the Clacton frontage have been identified as either known areas of a historic wreck or potential wreck sites, although it is possible that no historic features still exist at the sites. These ‘wreck’ sites include both boats and aircraft with the earliest record dating from the 17<sup>th</sup> century. All aircraft recorded as having crashed along the frontage date from the 1940s and are associated with the Second World War.

## 4. Conclusions and recommendations

The UK BAP maritime cliff and slope habitat is present at the site and enhancement measures should be considered to improve this area, especially if it is to be affected either temporarily or long-term by the plan. The proposed works are being implemented in order to prevent coastal erosion and so should prevent future losses of this valuable habitat.

Sublittoral sands and gravels are present along the frontage, however this habitat is likely to support only a patchy distribution and relatively low diversity of fauna. Implementation of the plan should ensure that beach sediment stability is maintained/increased which will maintain/improve the habitat.

Protected, rare and endangered flora and fauna species may be present along the coastline, including some with UK BAP Species Action Plans and others that are nationally scarce. This report has identified that native oysters and Atlantic cod are present. Fish species, such as Atlantic cod, are expected to move away from disturbances, and benthic species of note, such as the native oyster, are not expected to be found at the project site in significant numbers. There may be other faunal species present, but the dynamic nature of the beach means it is unlikely they would be in high numbers or that they would be affected other than temporarily by the plan. Plant species are present on the cliffs but there are none growing on the beach. Therefore botanical species are likely to be affected only if planned works are designed to directly alter the vegetated cliffs.

The coastline is used by residents and tourists for a range of commercial and recreational activities. The interests of such communities should be taken into account when considering the options for the coastal defences.

The potential for environmental effects of the plan on the protected areas in the vicinity of the project area are limited because disturbance during construction caused by the proposed scheme, including sediment plumes, will be short-term and localised. If large-scale changes to the frontage are proposed and an Environmental Impact Assessment is required, it is recommended that long-term changes to the sediment regime are considered in relation to the Holland Haven Marshes designated site, and any offshore benthic habitats such as Gunfleet sands, seven kilometres offshore from Clacton. Consultation should continue with Natural England during the optioneering process to ensure that changes to the defences are environmentally acceptable and to discuss the need for any mitigation and/or compensation.

The potential for environmental effects of any proposed works on historical assets located in the vicinity of the project area are limited because the disturbance during construction caused by the proposed scheme will be short-term and there is no real change in function proposed for the frontage in the medium term. However, it is suggested that indirect affects will be considered during construction with continued consultation with local stakeholders.



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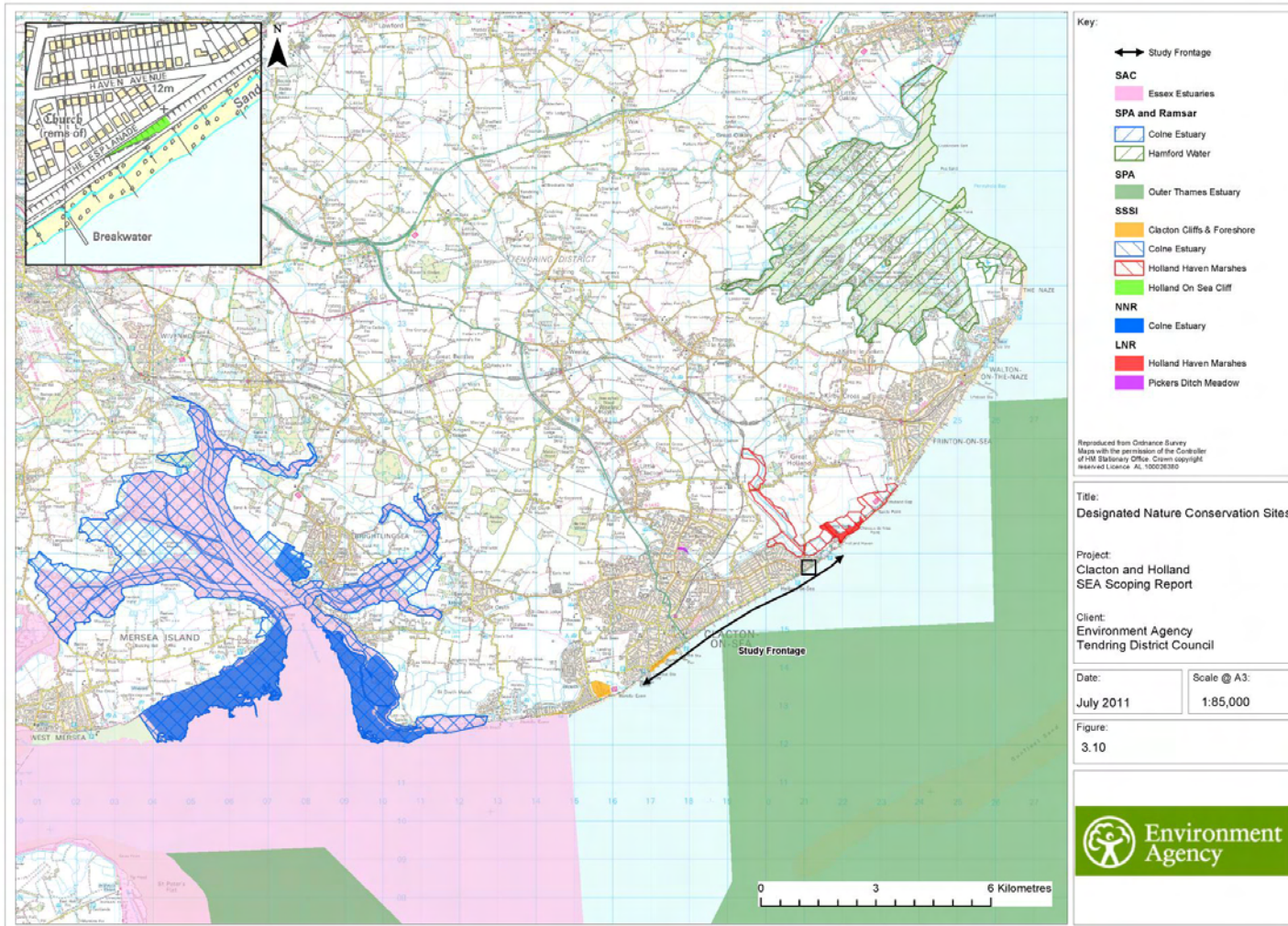
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# Appendices

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# Appendix A: Designated Sites Map

Figure A.1: Statutory Designated Sites



Source: Clacton and Holland-on-Sea Plan SEA (Appendix A Scoping Report) (Environment Agency, 2009)

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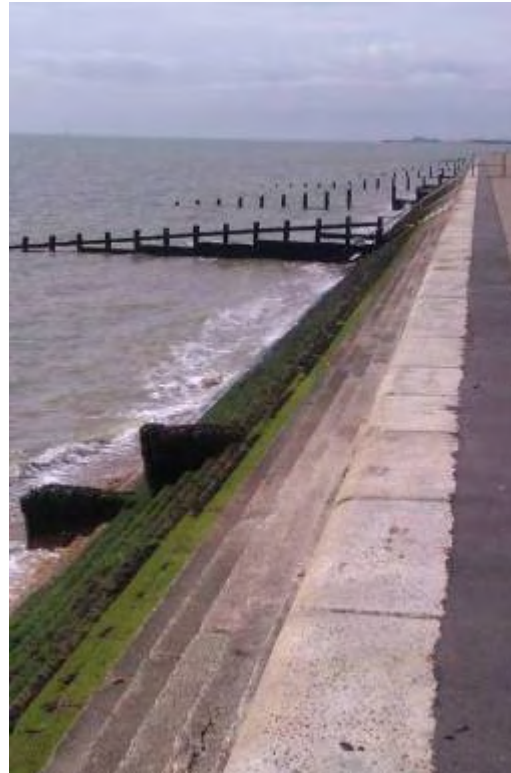
## Appendix B: Photographs

Figures B.1: Site visit photographs, taken 13 August 2012

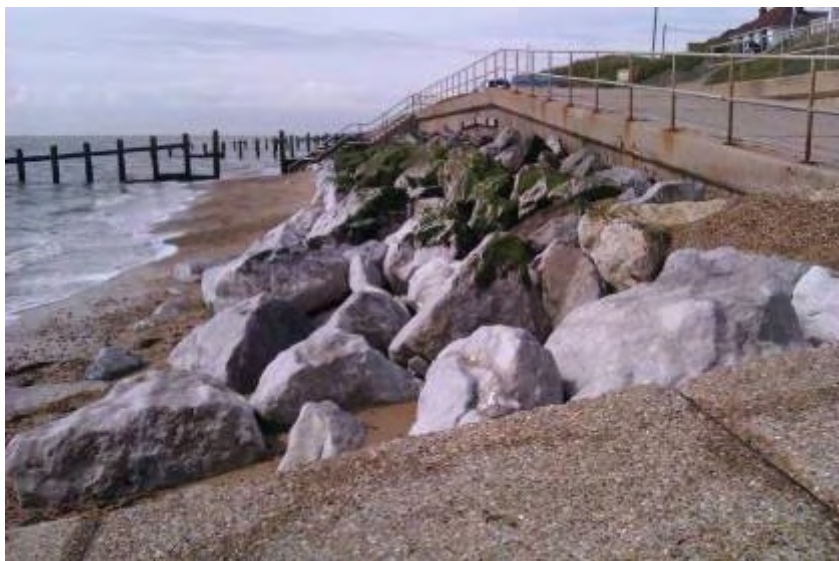
Looking south along Holland-on-Sea frontage showing wall defences and beach level. Presence of beach huts on promenade.



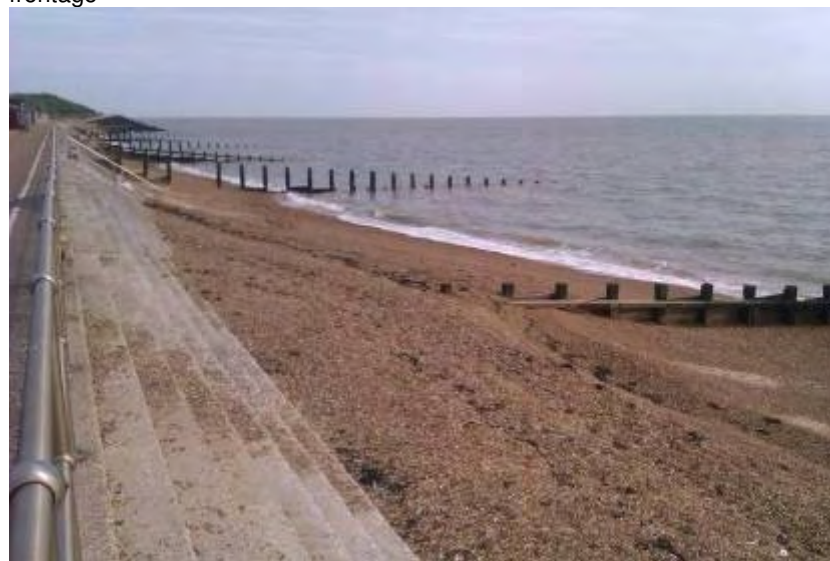
Stepped wall defences with algae growth.



Rock defences with sand and shingle beach. Algae growth on defences.



Demonstrating the steep sand and shingle beach which lines much of the frontage



Brown sea weed growing on a concrete groyne

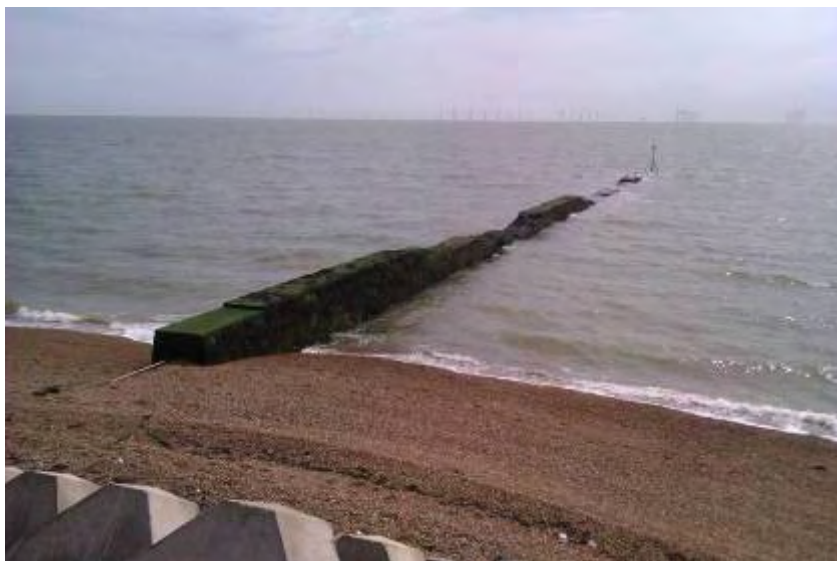


Algal growth on wave walkers





Concrete breakwater with algal growth



The beach south of Clacton Pier in Zone A (with Clacton and Foreshore Cliffs SSSI to the right of the image)

