



**EASTERN
SOLENT | COASTAL
PARTNERSHIP**

Eastoke Point, Hayling Island: Coastal Defence Works

Appendix K: Environmental Statement

TABLE OF CONTENTS

Non Technical Summary	5
The Study Area	5
1.0 Project Description	7
1.1 Summary of scheme	7
1.2 Groyne Replacement or improvement	7
1.3 Rock revetment	8
1.4 Existing splash wall	8
1.5 Beach Recharge	9
1.6 Groyne maintenance	9
1.7 Revetment maintenance	9
1.8 Beach recycling and management	9
1.9 Construction period	10
2.0 Alternatives Considered	
2.1 Opportunities	10
2.2 Proposed Options	11
3.0 Aspects of Environment likely to be significantly affected	12
3.1 Nature Conservation Designations	12
3.2 Special Protection Area (SPA)	13
3.3 The Solent Maritime Special Area of Conservation (SAC)	18
3.4 Site of Special Scientific Interest (SSSI)	22
3.5 Ramsar Sites	25
3.6 Local Nature Reserve (LNR)	28
3.7 Site of Importance for Nature Conservation (SINC)	30
3.8 Requirement for Appropriate Assessment	32
3.9 Method Statement to prevent pollution through construction stage	33
4.0 Traffic – Including navigation	36
4.1 Sea transport	37
5.0 Noise and Vibration	38
5.1 Noise	38
5.2 Vibration	38
6.0 Water Quality	40
6.1 Groundwater	40
6.2 Surface water	40
6.3 Bathing water quality	40
6.4 South East River Basin District (SERBD) Water Bodies	41
7.0 Landscape and Visual Amenity	44
8.0 Conclusions	44

Tables

Table 2.1	Criteria used to compare Future Coastal Defence Schemes	11
Table 3.1	Species/Populations that the Chichester and Langstone Harbours SPA is designated for	14
Table 3.2	Features of interest that the Solent Maritime Special Area of Conservation is designated for	20
Table 3.3	Habitats and species that the Chichester Harbour SSSI is designated for	22
Table 3.4	Habitats, species and populations that the Chichester and Langstone Harbours Ramsar site is designed for	26
Table 3.5	Potential Environmental Impacts of the Scheme	32
Table 6.1	Quality and status of water bodies adjacent to Eastoke Point, Hayling Island	42
Table 6.2	Mitigation measures to help achieve/maintain good ecological potential	43
Table 8.1	Summary of the key construction activities that will take place to deliver the scheme, highlighting how they could effect the designated species and habitats, and how these effects could be mitigated	46

Figures List

Figure 1	Site Location Plan	6
Figure 3.1	Nature Conservation Designations at Eastoke Point	13
Figure 3.2	Coverage of the Chichester and Langstone Harbours SPA at Eastoke Point	18
Figure 3.3	Coverage of the Solent Maritime SAC at Eastoke Point	21
Figure 3.4	Coverage of the Chichester Harbour SSSI at Eastoke Point, Illustrating Units 1 and 2	25
Figure 3.5	Coverage of the Chichester and Langstone Harbours Ramsar site at Eastoke Point	28
Figure 3.6	Full extent of the Sandy Point Local Nature Reserve	30
Figure 3.7	Location of SINCs within the location of Eastoke Point	31
Figure 3.8	Chichester Harbour Shellfish Water designated under the EC Shellfish Waters Directive (2006/113/EEC) Chichester Harbour is split into three Shellfish Waters (Emsworth Channel), Thornham Channel and Chichester Channel). The Chichester Harbour (Emsworth Channel) Shellfish Water is adjacent to the proposed works at Eastoke. Designated area highlight blue.	34
Figure 6.1	The three coastal water bodies adjacent to Eastoke Point, Hayling Island (from the South East River Basin District)	41

Annex List

Annex 1	Site Location Plan
Annex 2	Proposed Scheme Design
Annex 3	Typical cross-section of proposed groyne
Annex 4	Vegetated Shingle Methodology
Annex 5	Guidance for an Appropriate Assessment
Annex 6:	Natural England Letter of Support
Annex 7	Water Framework Directive Water Body Data Sheets
Annex 8	Regional Habitat Creation Programme Letter

Acronyms

AA	Appropriate Assessment
EA	Environment Agency
LNR	Local Nature Reserves
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
SPA	Special Protection Area
AONB	Area of Outstanding Natural Beauty
SINC	Site of Importance for Nature Conservation
GPS	Global Positioning System
HBIC	Hampshire Biodiversity Information Centre
SERBD	South East River Basin District

Non Technical Summary

This document is an Environmental Statement that builds from 'Guidance for an Appropriate Assessment (AA)', developed by Havant Borough Council. The AA was circulated for formal screening and scoping (July 2011) as part of the planning application scoping work for the proposed Eastoke Point coastal defence scheme. This reports incorporates comments made during this formal screening and scoping process and addresses significant likely impacts of the proposed works. Havant Borough Council received a letter of support from Natural England on 24th August 2011 for the 'Guidance for an Appropriate Assessment document (Annex 6).

This Environmental Statement will be submitted as part of the planning application for these works.

The Study Area

Hayling Island is located on the south coast of England in the Eastern Solent as shown in Figure 1. This summary report makes particular reference to the Eastoke Peninsula, which forms the south-eastern corner of the Island and is surrounded by water on the southern, eastern and northern frontages. The main water body located to the north and east of the peninsular is Chichester Harbour and the water body to the south, is the Solent.

The Eastoke Peninsula is a densely populated area to the south east of Hayling Island. The southern and south eastern frontages of the peninsula comprises mixed shingle beach with timber and rock groyne control structures. The southern Eastoke frontage is at risk from erosion, tidal flooding and over topping flooding. Havant Council Officers, working in partnership with the Environment Agency (EA), have considered in detail the potential risks to the Eastoke area and have developed the approved Eastoke Sectoral Strategy Study which sets out the preferred option for defending the Eastoke Peninsula, (approval date Dec 2006). The Strategy recommends works to protect the Peninsula from coastal erosion and flooding over a 100 year appraisal period and states that *"...the principle concern along the coastal frontage is that unmanaged, the shingle beach would erode leading to breach causing widespread flooding of properties...without intervention the Peninsula would be cut-off and 1,743 properties, a nature reserve, marina, sailing club, extensive holiday chalets and caravan parks and associated infrastructure would be lost through flooding from both the northern and southern frontages..."*. The Eastoke Point Coastal Defence works is one element of this "intervention". This option is consistent with the hold the line policy as recommended in the North Solent

Shoreline Management Plan, adopted in December 2010, which has recently superseded the East Solent Shoreline Management Plan (June 1997).

The Eastoke Peninsula benefits from a combination of existing defences; the southern Eastoke frontage has an extensive shingle storm beach that is a vital coastal defence for the residential area of the Eastoke Peninsula. Also, the defences already in place at the Eastoke Point area comprise an existing rock revetment, rock groynes, and a splash wall. The Environment Agency has recently constructed a tidal flooding scheme for the north of the Eastoke Peninsular. The scheme consisted of new and raised flood walls, flood gates and various other structures to provide the required degree of flood protection.

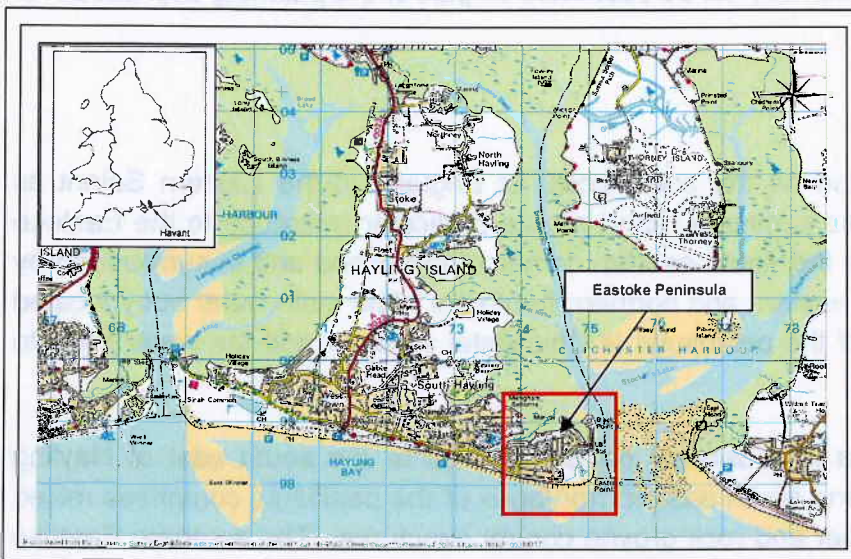


Figure 1: Site Location Plan

1. Project Description

1.1 Summary of scheme

In 2009, Havant Borough Council commissioned HR Wallingford to undertake the Eastoke Point Coastal Defence Study. It was completed in May 2009, and is available to view on the Havant Borough Council website: <http://www.havant.gov.uk/eastoke>. The study was undertaken to develop a sustainable coastal defence scheme to manage coastal erosion and flooding risks along the Eastoke Point frontage of Hayling Island. The Study considered a total of six main options for coastal defences at Eastoke Point. The studies preferred option, comprised a hybrid of various defences to achieve the desired standard of flood protection of 0.5% Annual Exceedance Probability (1 in 200 year) to these low-lying residential areas. The location of this scheme is illustrated in Annex 1.

The preferred option consisted of the following:

- Groyne replacement or improvement;
- Rock revetment;
- Improvement and maintenance of splash wall;
- Beach recharge;
- Groyne maintenance;
- Revetment maintenance;
- Beach recycling and management.

The proposed scheme, illustrated by Annex 2, will be designed to be capable of adaptation in the light of changes to wave conditions, tide levels, climate change, or for any unforeseen affects. This is thought appropriate due to unpredictable swell waves and variable near shore depths in this area. In the unlikely event that the design created adverse environmental impacts, a navigational hazard or fails to achieve the required standard of protection then the scheme could be adapted to address the situation at relatively low cost.

1.2 Groyne Replacement or improvement

It is proposed that the existing timber groyne numbers 4, 5, 6 and 7 are replaced with new rock groynes. Annex 1 illustrates the general arrangements of these works and highlights groyne numbers. The new groynes will be constructed with 3 to 6 tonne armour rock. The rock type will be confirmed once contracts have been let depending on market forces, however it is expected to be hard granite (syenite). The majority of the groyne will normally be buried by beach. The top of the groyne will generally follow the profile of the beach but may be up to 1m above the level of the beach especially following a storm event. Some work will also be required to Groyne

2, which will consist of shortening the existing timber groyne and replacing the shorter length of groyne with a new rock groyne.

It is also proposed to connect the existing timber groynes (numbered 7, 8, 9, 10 and 11) to the new rock revetment, again with 3 to 6 tonne rock armour. This connection will normally be buried under the beach. This is to stop the timber groynes being outflanked by wave run-up.

A typical cross-section of the proposed groynes is illustrated by Annex 3.

1.3 Rock revetment

It is proposed to construct a new rock revetment between Groyne 2 and Groyne 11 again with 3 to 6 tonne armour rock. Annex 2 illustrates the general arrangement of the revetment and highlights groyne numbers. As with the rock groynes, the rock type will be confirmed once contracts have been let depending on market forces, however it is also expected to be hard granite (syenite). Between Groynes 6 and 11 the revetment will protect the existing concrete recurve seawall from undermining and erosion. It will also assist in stabilising the top of the beach and act as a second line of defence if the beach is removed in a storm event. Between Groynes 4 and 5 the rock revetment will protect the existing sheet piles which are in reasonable condition. Between groynes 2 and 4 the revetment will provide the secondary defence at the back of the beach against erosion. At groyne 2 it will tie in to the previously constructed rock revetment.

The majority of this revetment will be covered in beach material and will therefore not be visible except if it is exposed by a storm event. The elevation of the berm will be set at + 5.6m OD. The elevation has been carefully designed to balance the standard of defence against the visual intrusion of the increased height of the berm.

A typical cross-section of the proposed revetments is illustrated by Annex 3. This is subject to change during the detailed design process.

1.4 Existing splash wall

The existing splash wall is at the rear of the promenade and extends from Groyne 7 westwards (see Annex 2). It provides a tertiary line of defence for the housing on the landward side of the wall from flooding by overtopping water. It is currently a reinforced concrete wall in reasonable condition. The design has been reviewed and it is not necessary to raise the splash wall to contain any overtopping flows. The opportunity will however be taken to refurbish the wall to extend its life. This will include applying a protective coating to the wall. In addition as part of the overtopping flows review, the opportunity has been taken to review the current

stoplog arrangements at the two access points. This has resulted in the proposal to install new stop logs at one location and to provide an access ramp at the other location that will improve disabled access.

1.5 Beach Recharge

It will be necessary to recharge the beach between groynes 3 and 7 (see Annex 2 for groyne numbers). The Beach will act as the primary coastal defence in this area. In the past it has been difficult to maintain the profile of the beach here and part of the current scheme is to design the groynes to keep the beach in place. The beach recharge material is likely to be similar to that existing on the beach. It is likely to be from an offshore source and delivered to the area by sea. Due to the water depths it is unlikely that it can be delivered to the location that is required. It may therefore be necessary to land the material further to the west and then transport it along the beach to the required location.

1.6 Groyne maintenance

There will be a continuing need to maintain the rock groynes if rocks become displaced or if it is found that the groynes need to be amended in height or length to adjust to changing conditions. Due to the size of the rocks, this maintenance is expected to be minimal.

1.7 Revetment maintenance

There will be a continuing need to maintain the rock revetment if rocks become displaced during a storm event or if the beach is washed away and the revetment becomes a safety hazard. Due to the size of the rocks, this maintenance is expected to be minimal.

1.8 Beach recycling and management

It is likely that the current recycling and management regime will need to continue once the scheme is completed. This is necessary to maintain the primary defence, the beach to the required standard. It is hoped however that the scheme will reduce both the quantity and the frequency of the operation. Future beach management activities for the full Hayling Island frontage are being considered as the South Hayling Beach Management Plan, which is currently being developed by the Eastern Solent Coastal Partnership.

1.9 Construction period

It is estimated that the scheme will take up to six months to construct and the preferred construction period is **April to September**. This is economically advantageous as the Contractor's costs will be lower due to less down time during the summer as a result of better weather and fewer storm conditions. It will also avoid disturbance to over wintering birds. It is believed that the interface with the public can be managed as the scheme location is away from the main beach frontage and access arrangements can be altered to ensure public safety.

2. Alternatives Considered

2.1 Opportunities

Based on the available technical and environmental information, the main opportunities for enhancement on the scheme options are as follows:

- The proposed scheme will be designed to manage both flooding and erosion risk, which will benefit the Eastoke peninsular by providing protection to the local residents, beach users, nearby amenities and businesses as well as protection to the Local Nature Reserve (LNR);
- The scheme may be able to provide environmental enhancement of the LNR through improvements to the drainage across the site;
- The scheme will provide improved access and amenity to users of Eastoke Point. This includes a resurfaced promenade and improved access at two locations via the access and drainage points;
- There will be enhancements to improve disabled access to the area, including improved views of the Solent, and full access via Nutbourne Road;
- There will be an opportunity for enhancement to the vegetated shingle colonies through a seed collection and dispersal programme post construction works with guidance from Hampshire County Council Rangers;
- There will also be an enhancement to the splash wall and promenade along the Eastoke Frontage.

2.2 Proposed Options

In 2009, HR Wallingford set out six main options to consider for the coastal defences of the Eastoke Point area (HR Wallingford. (2009). Eastoke Point Coastal Defence Study). These options included:

- Option 0 Do Nothing;
- Option 1 Do Minimum;
- Option 2 Beach recharge and recycling (alone);
- Option 3 Timber groynes, recharge and recycling;
- Option 4 Rock groynes, recharge and recycling;
- Option 5 Rock revetment with groynes, with recharge and recycling;
- Option 6 Seawall with groynes, recharge and recycling.

Each option was carefully considered in turn, weighing the advantages and disadvantages, then scored against the criterion set in Table 2.1. This multi-criteria analysis considered technical feasibility, environmental acceptability, sustainability and economic benefits of each option.

Criterion	Priority	Weighting
Prevention of flooding at Eastoke (by wave overtopping or breaching of the barrier beach at Eastoke Point).	High	10
Providing continued high beaches and coastal defence standard along Eastoke frontage west of Groyne 7.	High	8
Minimising down-drift erosion and risks of breaching of the spit leading to Black Point.	High	7
Minimising disturbance to flows in Chichester Harbour entrance.	Moderate	5
Impacts on the Sandy Point Nature Reserve.	Moderate	5
Initial and maintenance costs.	Moderate	5
Sustainability.	Moderate	5

Table 2.1: Criteria used to compare Future Coastal Defence Schemes

The multi-criteria analysis technique indicated that the best two coastal defence options for the Eastoke Point frontage are:

- Option 4 Rock groynes and recycling; and
- Option 5 Rock revetment, groynes, recharge and recycling.

After further consideration, the preferred defence scheme for the Eastoke Corner frontage was confirmed as **Option 5**.

For a more detailed review of the different Options along with their advantages and disadvantages, please refer to Section 8 of the HR Wallingford (2009) report which can be found on the Havant Borough Council website: <http://www.havant.gov.uk/eastoke>.

3. Aspects of Environment likely to be significantly affected

3.1 Nature Conservation Designations

A number of environmental designations have been awarded to sites within the Eastoke Peninsular area, and Eastoke Point tends to form a small part of much wider designated areas (harbour wide). The Peninsula is entirely surrounded by a Special Area of Conservation (SAC), whilst Chichester Harbour is designated as a Site of Special Scientific Interest (SSSI), a Special Protection Area (SPA), Ramsar Site and an Area of Outstanding Natural Beauty (AONB). Sandy Point, located on the eastern tip of the Eastoke Peninsula is designated as a Local Nature Reserve and the Southern Eastoke Frontage is a designated Site of Importance for Nature Conservation (SINC). It is recognised that any shoreline management operations must take account of the environmental value of these areas, and ensure damage is avoided or mitigated against. Figure 3.1 illustrates all the nature conservation designations at Eastoke Point, however these are discussed individually through the remainder of Section 3, with more specific maps for each designation included.

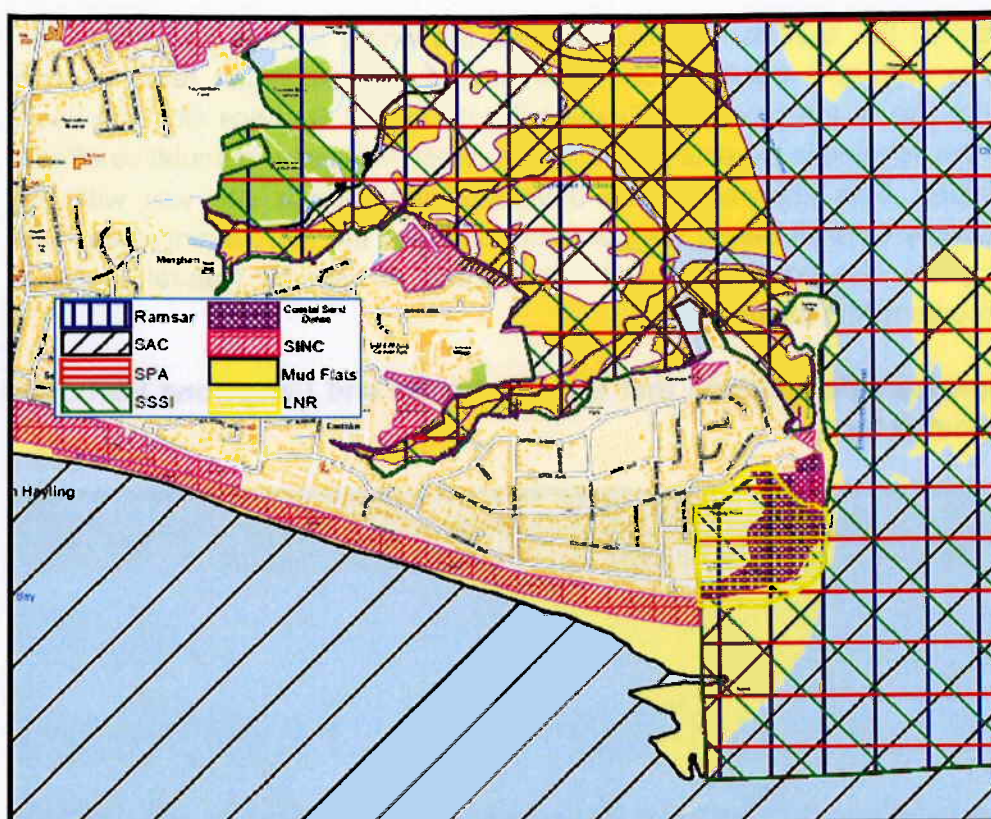


Figure 3.1: Nature Conservation Designations at Eastoke Point

3.2 Special Protection Area (SPA)

A major aim of the EU Birds Directive is to conserve the habitats of qualifying bird species in order to ensure their survival and reproduction within the EU. A key mechanism in achieving this is the classification by Member States of the most suitable sites as SPA.

Chichester & Langstone Harbours qualify as a SPA for supporting an assemblage of c. 102,000 wintering waterfowl. This large population of a number of different species of waterfowl, visit the harbours during migration or overwinter there. Many travel from breeding grounds in Greenland, Iceland, Scandinavia and Siberia. The internationally important assemblage of waterfowl not only includes the internationally important regularly occurring migratory birds but also those bird species that are present in nationally important numbers or whose populations exceed 2,000 individuals. Figure 3.2 illustrates the coverage of the Chichester & Langstone Harbours SPA at Eastoke Point, which is a small part of the full extent of this SPA and the species it qualifies for.

Table 3.1 lists all the species / populations that the whole SPA is designated for. Table 3.1 also highlights our best understanding of the population level of each species on the site of the proposed Eastoke Point Coastal Defence Scheme itself, and whether the scheme is expected to have any direct, indirect or cumulative effects on each species. This knowledge was developed following a site visit with the Hampshire County Council Senior Ranger, who manages the surrounding area. This understanding has also been discussed with a Lead Adviser for Natural England, who is in agreement with these findings.

Table 3.1 Species / Populations that the Chichester and Langstone Harbours SPA is designated for

Site qualifies under:	Species	Population level at site	Effect of scheme
Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance for the following species listed in Annex 1 of the Directive.	• Little Tern (<i>Sterna albifrons</i>) during the breeding season; • Sandwich Tern (<i>Sterna sandvicensis</i>) during the breeding season; • Little Egret (<i>Egretta garzetta</i>) on passage; • Bar-tailed Godwit (<i>Limosa lapponica</i>) over winter; • Little Egret (<i>Egretta garzetta</i>) over winter; • Ringed Plover (<i>Charadrius hiaticula</i>) on passage; • Little Egret (<i>Egretta garzetta</i>) on passage;	All of these species use the wider harbour inlets, but are not so frequent on the open coastline for feeding or roosting, as it's fairly well used by tourists. There is one nesting pair of ringed plover (<i>Charadrius hiaticula</i>) that use the beach to the north of the proposed scheme, whose eggs often get trampled by beach users.	The proposed scheme will have little affect on the species listed. Disturbance will be kept to a minimum and will only occur over a limited time period (during scheme construction). The nesting pair of Ringed Plover (<i>Charadrius hiaticula</i>) could be indirectly affected by the scheme if it were constructed during their nesting period, however this can be mitigated against (See text, Section 3.2).
Article 4.2 of the Directive (79/409/EEC) by supporting populations of	• Ringed Plover (<i>Charadrius hiaticula</i>) on passage; • Black-tailed Godwit (<i>Limosa limosa islandica</i>) over winter;	All of these species use the wider harbour inlets, but are not so frequent on the open	The proposed scheme will have little affect on the species listed. Disturbance will be kept to a minimum

Site qualifies under:	Species	Population level at site	Effect of scheme
European importance of the following migratory species.	• Dark-bellied Brent Geese (<i>Branta bernicla bernicla</i>) over winter; • Dunlin (<i>Calidris alpina alpina</i>) over winter; • Grey Plover (<i>Pluvialis squatarola</i>) over winter; • Redshank (<i>Tringa totanus</i>) over winter; • Ringed Plover (<i>Charadrius hiaticula</i>) over winter;	coastline for feeding or roosting, as it's fairly well used by tourists. There is one nesting pair of ringed plover (<i>Charadrius hiaticula</i>) that use the beach to the north of the proposed scheme, whose eggs often get trampled by beach users.	and will only occur over a limited time period (during scheme construction). The nesting pair of Ringed Plover (<i>Charadrius hiaticula</i>) could be indirectly affected by the scheme if it were constructed during their nesting period, however this can be mitigated against. (See text, Section 3.2).
Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl including.	• Wigeon (<i>Anas Penelope</i>); • Bar-tailed Godwit (<i>Limosa lapponica</i>); • Dark-bellied Brent Geese (<i>Branta bernicla bernicla</i>); • Ringed Plover (<i>Charadrius hiaticula</i>); • Grey Plover (<i>Pluvialis squatarola</i>); • Dunlin (<i>Calidris alpina alpina</i>); • Black-tailed Godwit (<i>Limosa limosa islandica</i>); • Redshank (<i>Tringa tetanus</i>); • Little Grebe (<i>Tachybaptus ruficollis</i>); • Little Egret (<i>Egretta garzetta</i>); • Shelduck (<i>Tadorna tadorna</i>);	All of these species use the wider harbour inlets, but are not so frequent on the open coastline for feeding or roosting, as it's fairly well used by tourists. There is one nesting pair of ringed plover (<i>Charadrius hiaticula</i>) that use the beach to the north of the proposed scheme, whose eggs often get trampled by beach users.	The proposed scheme will have little affect on the species listed. Disturbance will be kept to a minimum and will only occur over a limited time period. (during scheme construction). The nesting pair of Ringed Plover (<i>Charadrius hiaticula</i>) could be indirectly affected by the scheme if it were constructed during their nesting period, however this can be mitigated against. (See text, Section 3.2).

Site qualifies under:	Species	Population level at site	Effect of scheme
	• Curlew (<i>Numenius arquata</i>); • Teal (<i>Anas crecca</i>); • Pintail (<i>Anas acuta</i>); • Shoveler (<i>Anas clypeata</i>); • Red-breasted Merganser (<i>Mergus serrator</i>); • Oystercatcher (<i>Haematopus ostralegus</i>); • Lapwing (<i>Vanellus vanellus</i>); • Knot (<i>Calidris canutus</i>); • Sanderling (<i>Calidris alba</i>); • Cormorant (<i>Phalacrocorax carbo</i>); • Whimbrel (<i>Numenius phaeopus</i>).		

For the majority of wildfowl and wader species, their preferred roosting and breeding grounds are further up in the sheltered harbour areas, and there should be no adverse effects on the species and their use of the SPA as a whole, as a result of the proposed Eastoke Point scheme. It is considered that the scheme will have a 'limited' impact on migratory and breeding birds. Potential disturbance will be reduced through conditions in the works contract that state clear timescales for works that avoid times of the year when there is known heavy bird use of the area. Any disturbance during construction works would be time limited, with large areas of the frontage free from disturbance at any one time.

The Environment Officer at Chichester Harbour Conservancy has indicated that the most important time of the year for feeding and roosting birds in Chichester and Langstone Harbours is between the start of November to the end of February, however October and March can be important dependent on annual climatic conditions in the UK and Europe. Therefore any construction works should be avoided between 1st November and 28th Feb to prevent disturbance to the wildfowl and waders during these important times. If works were expected to run into October

or March, this should be agreed through wider consultation with Natural England and Chichester Harbour Conservancy. The works contract will confirm the timings of construction works.

The Senior Ranger at Hampshire County Council has also highlighted that a pair of Ringed Plover nest between Eastoke and Black Point between March and May each year. These birds have an extended three month nesting period, as their eggs tend to get trampled by walkers and so they may nest three or four times a year. It may be possible to fence off an area for the birds to nest in order to protect the eggs from being trampled earlier in the year. This would shorten their nesting period on the beach, improve the chances of a successful hatch and shorten the time they'd require the use of the beach at this point. In addition, when works are taking place, barriers would be installed to the eastern boundary of the scheme, largely for Health and Safety reasons. Hampshire County Council Countryside Officers have stated that during works we could close access to the foreshore from Footpath 515 which runs around Eastoke Nature Reserve. People could then still use the full footpath to access around the nature reserve, but it would stop access off the footpath on to the foreshore. This will be a requirement of the Contract.



Figure 2.2: Overview of the Chichester and Eastoke Harbour SPA in English Policy

2.3 The Solent Maritime Special Area of Conservation (SAC)

The European Habitats Directive is an international agreement which sets out a number of actions to be taken for nature conservation. The Habitats Directive takes account of economic, social, cultural and regional requirements and sets out measures to maintain or enhance natural habitats at a favourable conservation status. The Conservation of Species and Habitats Regulations 2002 transpose the Habitats Directive into law in Great Britain.

The Solent Maritime Special Area of Conservation was designated by the European Commission in December 2004 and is now a site of community importance. The SAC, the area of which is illustrated by Figure 2.3, includes a number of features qualifying under Annex I of the Habitats Directive. The main habitat of coastal marine the location of the proposed scheme site is critical vegetation of this area.

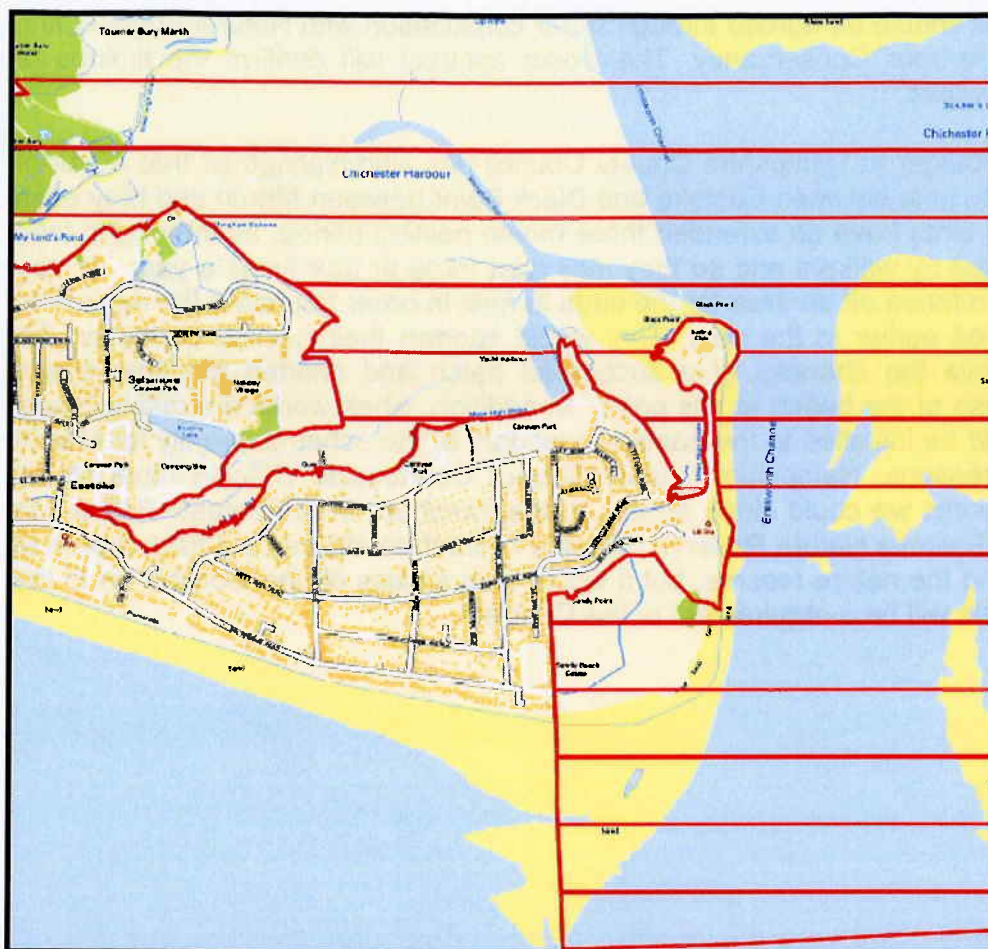


Figure 3.2. Coverage of the Chichester and Langstone Harbours SPA at Eastoke Point

3.3 The Solent Maritime Special Area of Conservation (SAC)

The European habitats Directive is an international agreement, which sets out a number of actions to be taken for nature conservation. The Habitats Directive takes account of economic, social, cultural and regional requirements and sets out measures to maintain or enhance natural habitats at a favourable conservation status. The Conservation of Species and Habitats Regulations 2010 transpose the Habitats Directive into law in Great Britain.

The Solent Maritime Special Area of Conservation was accepted by the European Commission in December 2004 and is now a site of community importance. This SAC, the area of which is illustrated by Figure 3.3, includes a cluster of features qualifying under Annex 1 of the Habitats Directive. The main feature of concern within the location of the proposed scheme site is annual vegetation of drift lines.

Approximately 1/3 of the UK coastline is fringed by beach however much of this coastline is devoid of vegetation.

Table 3.2 lists all the features of interest that the SAC is designated for. Table 3.2 also highlights whether any of the features of interest are present on the site of the proposed Eastoke Point Coastal Defence Scheme, and whether the scheme is expected to have any direct, indirect or cumulative effects on each interest feature. This knowledge was developed following a site visit with the Hampshire County Council Senior Ranger who manages the surrounding area, and through discussions with a Lead Adviser for Natural England.

Table 3.2 Features of interest that the Solent Maritime Special Area of Conservation is designated for

Site qualifies under:	Features of interest	Are features of interest present on site of scheme?	Will scheme effect features of interest
Annex 1 habitats that are a primary reason for selection of this site.	• Estuaries; • Spartina swards (Spartinion maritimae); • Atlantic salt meadows (Glauco-Puccinellietalia).	No – further within sheltered harbour.	No effect, scheme works with natural processes to maintain similar situation to now.
Annex 1 habitats present as a qualifying feature, but not a primary reason for selection of this site.	• Sandbanks which are slightly covered by sea water all the time; • Mudflats and sandflats not covered by seawater at low tide; • Coastal lagoons; • Annual vegetation of drift lines; • Perennial vegetation of sandy banks; • Salicornia and other annuals colonising mud and sand; • Shifting dunes along the shoreline with Ammophila arenaria ('white dunes').	Annual vegetation of drift lines is the main habitat that exists within the vicinity of the Eastoke Point scheme.	It could have a direct effect on the vegetated shingle habitat, although this can be limited and there are opportunities to improve this habitat as part of the scheme (See text, Section 3.3). The scheme itself will increase the littoral sediment in the area through beach recharge, which may increase the suitability of the beach to vegetation growth.
Annex II species present as a qualifying feature, but not a primary reason for site selection.	• Desmoulin's whorl snail (Vertigo moulinsiana).	Not present at Eastoke Point	No effect.

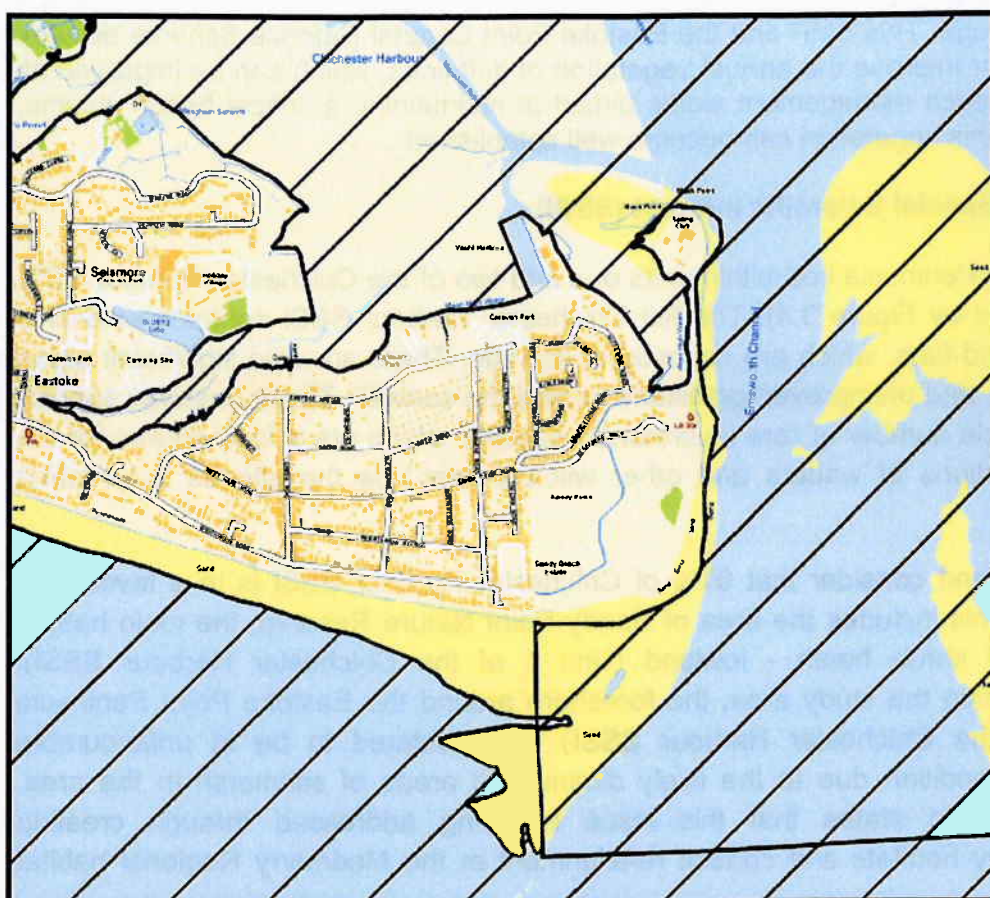


Figure 3.3. coverage of the Solent Maritime SAC at Eastoke Point.

This scheme is not expected to have any negative effects on the Solent and Maritime SAC and the features of interest listed in Table 3.2. Whilst there are patches of annual vegetation of drift lines within the vicinity of the proposed Eastoke Point scheme, any impacts on this will be kept to a minimum during construction activities. It's not possible to avoid all damage to the vegetated shingle, however there will be a requirement in the works contract to ensure the Contractor does not cause unnecessary damage. This can be achieved by restricting the working area. The Eastern Solent Coastal Partnership already undertakes vegetation surveys which highlight areas of vegetated shingle along the Hayling Island frontage, and a more detailed survey will be undertaken by a local expert to identify and record the actual species that are present on the beach.

To mitigate against any potential disruption, it is proposed to undertake a seed collection and dispersal programme pre and post construction works (see Section 3.6 & 3.7 for further information). The Hayling Island Beach Management Plan, which is currently being developed by the Eastern Solent Coastal Partnership, will further consider the vegetated shingle quality along the continuous Hayling Island open

coastal frontage. This BMP and the Eastoke Point Coastal Defence Scheme all seek to maintain or improve the annual vegetation of drift lines, which can be improved as a result of beach management works aimed at maintaining a critical beach volume, upon which this vegetation can become well established.

3.4 Site of Special Scientific Interest (SSSI)

The Eastoke Peninsula lies within units one and two of the Chichester Harbour SSSI (as illustrated by Figure 3.4). The full Chichester Harbour SSSI contains extensive mud and sand-flats, which are exposed at low tide. There are also significant areas of saltmarsh, and unimproved grassland behind the seawall. These pastures support a considerable number of rare invertebrate species, which are a food source for the large populations of waders and other wildfowl that use the site as a wintering ground.

Natural England consider that 91% of Chichester Harbour SSSI is in a favourable condition. This includes the area of Sandy Point Nature Reserve, the main habitat being Dwarf shrub heath - lowland (Unit 1 of the Chichester Harbour SSSI). However, within the study area, the foreshore around the Eastoke Point Peninsula (Unit 2 of the Chichester Harbour SSSI) is considered to be in unfavourable recovering condition due to the likely diminishing areas of saltmarsh in the area. Natural England states that this issue is being addressed through creating compensatory habitats and coastal re-alignment at the Medmerry Regional habitat creation site.

Table 3.3 Habitats and species that the Chichester Harbour SSSI is designated for

SSSI unit name	Habitats & species present	Notable habitats and species present on site of scheme?	Will scheme effect notable habitats and species?
Chichester Harbour Unit 1 (favourable) Sandy Point Nature reserve	• Main habitat: Dwarf shrub heath – lowland; • Mosaic of dune heath; • areas of acid grassland; • dense and scattered patches of gorse and bramble	These habitats and species are not present on the site of the scheme itself. They are all present in the Sandy Point Local Nature Reserve to the rear of the beach, landward of	The scheme will not negatively effect these species and habitats, but will help protect them, by preventing erosion and loss of the Sandy Point

SSSI unit name	Habitats & species present	Notable habitats and species present on site of scheme?	Will scheme effect notable habitats and species?
	scrub; • permanent pond within the centre of the site, surrounded by hard and soft rush; • A fringe of marrum grass occurs around the seaward edge of the unit adjacent to the shingle, which over a very short distance grades into the dune heath inland • Ling and bell heather; • sheep's sorrel • heath bedstraw • bryophytes (<i>Rhytidiadelphus squarrosus</i>, <i>Pseudoscleropodium purum</i>, <i>Dicranum scoparium</i>) • lichens (<i>Cladonia spp</i>).	the proposed location of the scheme.	Local Nature reserve, and reduce the occurrences of flooding.
Chichester Harbour – Unit 2 (unfavourable recovering)	• Main Habitat – Littoral Sediment • Large area of Intertidal mud • Extensive areas of pioneer salt marsh • biotypes associated with	Littoral sediment is the main habitat that exists within the vicinity of the Eastoke Point scheme.	It could have a direct effect on the vegetated shingle habitat, although this can be limited and there are opportunities to improve this

SSSI unit name	Habitats & species present	Notable habitats and species present on site of scheme?	Will scheme effect notable habitats and species?
	the intertidal sediments • Birds		habitat as part of the scheme (see text, Section 3.3). The scheme itself will increase the littoral sediment in the area through beach recharge, which may increase the suitability of the beach to vegetation growth.

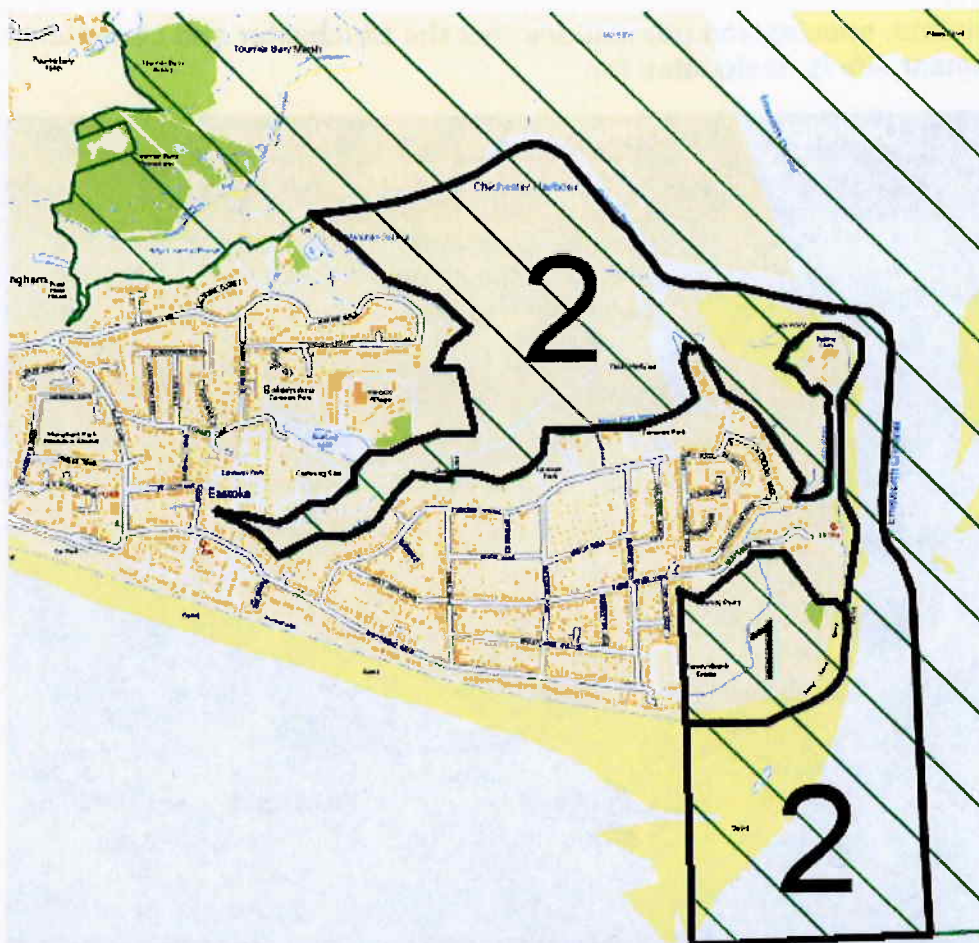


Figure 3.4. Coverage of the Chichester Harbour SSSI at Eastoke Point, illustrating Units 1 and 2.

Many of the habitats and species present in the Chichester Harbour SSSI are not present on the site of the scheme itself, except for the littoral sediment habitats within unit 2. The scheme itself will offer protection to Sandy Point Nature Reserve (Unit 2 of the SSSI, much of which would be lost over the next 100 years to erosion, resulting in a loss or reduction of the species and habitats noted under unit 1 of the SSSI.

3.5 Ramsar Sites

The study area lies within the Chichester and Langstone Harbours Ramsar Site and has been designated under Criterion 1, 5 & 6 of the Ramsar Convention. Figure 3.5 illustrates the full extent of the Chichester and Langstone Harbours Ramsar site. Table 3.4 illustrates the criterion, and the habitats, species and populations for which this site is designated as Ramsar.

Table 3.4 Habitats, species and populations that the Chichester and Langstone Harbours Ramsar site is designated for

Criteria	Description	How does the criteria relate to the scheme site	Will scheme effect criteria
1	Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. This site includes: • intertidal mudflats; • saltmarsh; • sand and shingle spits; • sand dunes.	The Scheme itself relates to the shingle spit feature of this designation.	Shingle recharge and ongoing recycling will help maintain a healthy volume of shingle, thereby helping to retain a healthy spit. This is key to maintaining the important roosting area at Black Point.
5 – Assemblages of international importance	Species with peak counts in winter: 76,480 waterfowl (5 year peak mean 1998/99 – 2002/03)	All of these species use the wider harbour inlets, but are not so frequent on the open coastline for feeding or roosting, as it's fairly well used by tourists.	The proposed scheme will have little affect on the species listed. Disturbance will be kept to a minimum and will only occur over a limited time period (see Section 3.2 for more information).
6 – species / populations occurring at levels of international importance	Species with peak counts in spring / autumn: • Ringed plover (<i>Charadrius hiaticula</i>); • Black-tailed godwit (<i>Tringa tetanus tetanus</i>); Species with peak counts in winter: • Dark-bellied	All of these species use the wider harbour inlets, but are not so frequent on the open coastline for feeding or roosting, as it's fairly well used by tourists. There is one nesting pair of ringed plover (<i>Charadrius hiaticula</i>) that use the beach to the north of the proposed scheme, whose eggs often	The proposed scheme will have little affect on the species listed. Disturbance will be kept to a minimum and will only occur over a limited time period (during scheme construction). The nesting pair of Ringed Plover (<i>Charadrius hiaticula</i>) could be indirectly affected by the scheme if it were constructed during their nesting period,

Criteria	Description	How does the criteria relate to the scheme site	Will scheme effect criteria
	brent goose (<i>Branta bernicula bernicula</i>); • Common shelduck (<i>Tadorna tadorna</i>); • Grey Plover (<i>Pluvialis squatarola</i>) • Dunlin (<i>Calidris alpina alpina</i>) • Species/ populations identified subsequent to designation for possible future consideration under criterion 6. Species regularly supported during the breeding season: • Little tern (<i>Sterna albifrons alpina</i>)	get trampled by beach users.	however this can be mitigated against (see text, Section 3.2).



Figure 3.5. Coverage of the Chichester and Langstone Harbours Ramsar site at Eastoke Point.

The most notable criterion that relates specifically to Eastoke Point is Criterion 1, sand and shingle spits. The scheme itself will help maintain a flow of sediment to feed the spit to the north east of the scheme. Without intervention, Eastoke Point would erode through loss of shingle and cliffing. This could result in loss of the spit over time, which is an important feature of the Ramsar site.

3.6 Local Nature Reserve (LNR)

Sandy Point Local Nature Reserve and Countryside Heritage Site lies immediately behind the beach at Eastoke. The full extent of this nature reserve is illustrated by Figure 3.6. This site comprises an area of coastal heathland, sand dunes and scrub. The LNR is considered to be the best example of vegetated sand and shingle with vascular plants and also host to a large number of flora species which are of restricted occurrence in Hampshire, especially mobile sand dune species (N Sanderson, 1998). Viewing the Vegetation Survey of Sandy Point, 1997 report, it can be seen that the vast majority of vegetation is present within the landward area of the perimeter fence of the reserve.

The Eastern Solent Coastal Partnership's in-house surveyor carries out an annual summer vegetation survey along the Eastoke frontage, Hayling Island to identify the locations of the vegetated shingle using a Global Positioning System (GPS). This survey is carried out in accordance with the Eastern Solent Coastal Partnership's Beach Recycling Vegetated Shingle Methodology as shown in Annex 4. This survey data will be used in conjunction with a pre-construction vegetated shingle survey to ensure any impact to the vegetated shingle is kept to an absolute minimum.

Also, as a result from an on-site meeting with the County Ranger of the LNR, it has been suggested that a seed collection and dispersal programme for the vegetated shingle species is carried out both pre (collection) and post (dispersal) construction works. This is to be done with guidance from the County Ranger. This programme will not only help to mitigate any adverse affects to the vegetated shingle but could provide potential enhancement of the colonies.

Impacts of the scheme on vegetated shingle will be kept to a minimum during construction activities. It will not be possible to avoid all damage to the vegetated shingle, however there will be a requirement in the works contract to ensure the contractor does not cause unnecessary damage.



Figure 3.6 Full extent of the Sandy Point Local Nature Reserve.

3.7 Site of Importance for Nature Conservation (SINC)

There are a number of designated SINC's close to the study area, with the most recently designated site (as of beginning February 2011) being located on the beach of Hayling Island frontage, which is across the site of the proposed project works. Figure 3.7 illustrates the location of these SINC's.

A survey carried out and made available by the Hampshire Biodiversity Information Centre (HBIC) indicates that the stretch of beach around Eastoke Point ranges from being 'largely unvegetated shingle' to 'partially vegetated shingle'. The survey indicates that within the area of proposed works, eight areas were surveyed. Of these eight, four areas are recorded as '**Largely unvegetated** shingle banks and beach'. A fifth area is recorded as '**largely unvegetated**' dune apart from a narrow strip of semi-fixed dune grassland comprising Sand Sedge (*Carex arenaria*), Marram (*Ammophila arenaria*), Sea Sandwort (*Honckenya peploides*) and Sea Holly (*Eryngium maritimum*), all of which are classified as 'County Scarce'. A sixth area of

survey is recorded as '**partly vegetated** shingle bank' comprising Stiff Saltmarsh-grass (*Puccinellia rupestris*), classified as a 'nationally scarce' species. A seventh area is recorded as shingle community, '**partially vegetated** shingle of Sandy Point Beach' which comprises Sea Kale (*Crambe maritima*), Sea Knotgrass (*Polygonum maritimum*), Yellow-horned Poppy (*Glaucium flavum*) amongst other County scarce species and the eighth area is dune area with patches of Sheep's Fescue (*Festuca ovina*), Common Brent (*Agrostis capillaries*) and Sheep's Sorrel agg (*Rumex acetosella*) grassland. Of the species identified in this area, none were identified by HBIC as being 'species of particular interest'.

As aforementioned in Sections 3.3 & 3.6, the Eastern Solent Coastal Partnership's in-house surveyor carries out an annual summer vegetation survey along the Eastoke frontage, Hayling Island to identify the locations of the vegetated shingle using a Global Positioning System (GPS). This survey data will be used in conjunction with any pre-operation vegetated shingle survey to ensure any impact to the vegetated shingle is kept to an absolute minimum throughout the proposed works. To further mitigate against potential disruption, it is proposed to undertake a survey of the vegetation species present, and a seed collection and dispersal programme both pre and post construction works, to mitigate against any losses during the works. The scheme itself will stabilise the beach, which over time is expected to develop larger vegetated shingle communities.

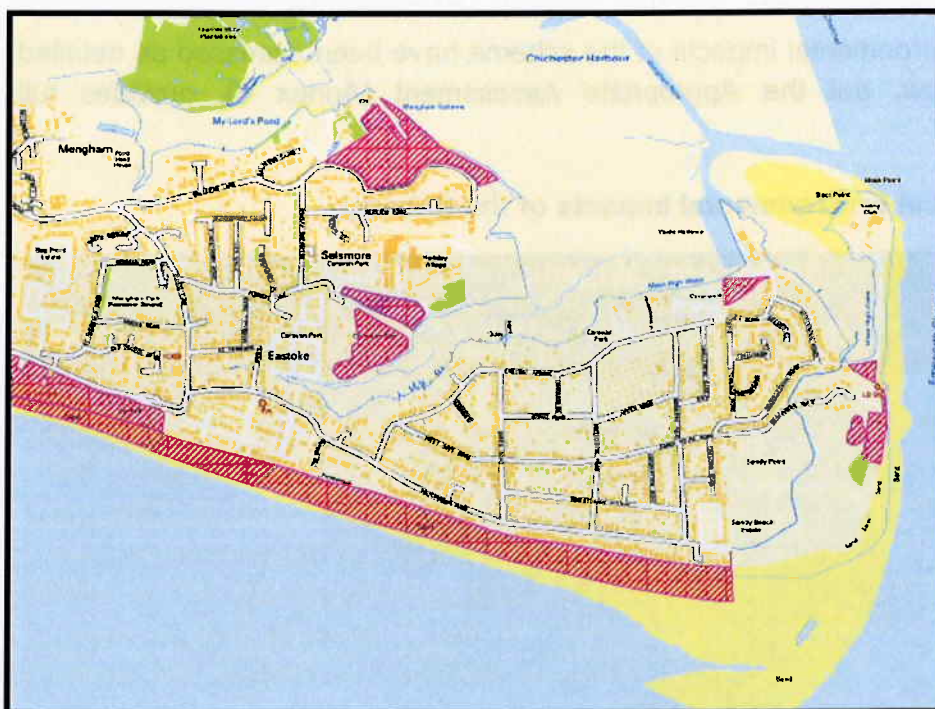


Figure 3.7. Location of SINC's within the location of Eastoke Point.

3.8 Requirement for Appropriate Assessment

For all European Sites specified under Regulation 61 of the Conservation of Species and Habitats Regulations 2010, an Appropriate Assessment is required to be undertaken by law. A European Site is any classified SPA or SAC from the point where the Commission and the Government agree the site as a Site of Community Importance. Appropriate Assessment is also required, as a matter of Government Policy, for potential SPAs, candidate SACs and listed Ramsar Sites for the purpose of considering development proposals affecting them (PPS 9 Biodiversity and Geological Conservation). Therefore, under the EU 'Habitats Directive', Havant Borough Council acting as the competent authority has completed a guidance for an appropriate assessment document (Annex 5), which forms an integral part of this Environmental Statement.

Havant Borough Council has worked with the Hampshire Biodiversity Information Centre (HBIC), Natural England and Sandy Point Nature Reserve Rangers (the latter two sit on the steering group for the project and have been consulted for their input.)

Natural England provided Havant Borough Council with a letter of support stating "Natural England agrees with the outcomes in the Appropriate Assessment". This letter can be found in Annex 6: Natural England Letter of Support, dated 24th August 2011.

The potential environmental impacts of the scheme have been assessed as detailed in table 3. below, but the Appropriate Assessment (Annex 6), provides full information.

Table 3.5 Potential Environmental Impacts of the Scheme

Potential Impact	Significant likely impact	Mitigation measures
Disruption to the hydrodynamics/ processes of the Estuary's function	No	The design will use current research and historic data to minimise any potential impacts on the Estuarine function. The scheme will be adaptable so that any unforeseen effects can be rectified and there will be close consultation with other bodies during the design process to address any concerns. Without the scheme, flooding and erosion over time could disrupt the hydrodynamics / processes of the Estuary's

		function.
Disturbance of nesting, roosting birds	No	Restrict working period of construction activities and prevent access to nesting birds.
Noise and vibration	No	Restrict working hours and select time of year. Use appropriate equipment during construction.
Destruction of areas of vegetated shingle	Not significant, but some impacts can't be avoided.	Carry out survey prior to construction commencing and prevent access to vegetated areas. It is not possible to avoid all damage to the vegetated shingle, however there will be a requirement in the works contract to ensure the contractor does not cause unnecessary damage. This can be achieved by restricting the working area. Upon completion of a species survey, a seed collection and dispersal plan will be developed to mitigate against any unavoidable damage.
Suspended solids discharged to seawater affecting Mollusca	No	Restrict methods of working / tidal operation timings (see Section 3.9).
Scheme causing beach material to migrate in to unexpected areas causing damage to habitats	No	Scheme is likely to reduce the migration of beach material, not increase it.
Public access	No	Make suitable alternative arrangements and include clear signage and consultation.

3.9 Method Statement to prevent pollution through construction stage:

The scheme has the potential to cause localised, short-term pollution of the water body through increased turbidity during construction. Without appropriate operating methods, there would also be the potential for hydrocarbon pollution resulting from accidental spillages of vehicle fuels, oils and other construction materials.

As part of the tender process for the works, the Contractor would be requested to provide a written method statement and Construction Environmental Management

Plan, to highlight how water quality, amongst other environmental aspects would be protected during construction. This would be checked against the relevant UK legislation and Environment Agency Pollution Prevention Guidelines, in particular:

- PPG1 – General guide to the prevention of pollution;
- PPG5 – Works and maintenance in or near water;
- PPG2 - Above ground oil storage tanks;
- PPG6 – Pollution prevention guidance for working at construction and demolition sites.

The Eastoke works are adjacent to Chichester Harbour Shellfish Waters (Figure 3.8). The proposed works are similar to the beach management works that have been undertaken along the full Hayling Island Coastal frontage in the past and are not expected to negatively affect the waters. The AONB manager at Chichester Harbour Conservancy has stated that similar works historically have not been recorded to have deteriorated the water quality and therefore is not concerned by these proposals.

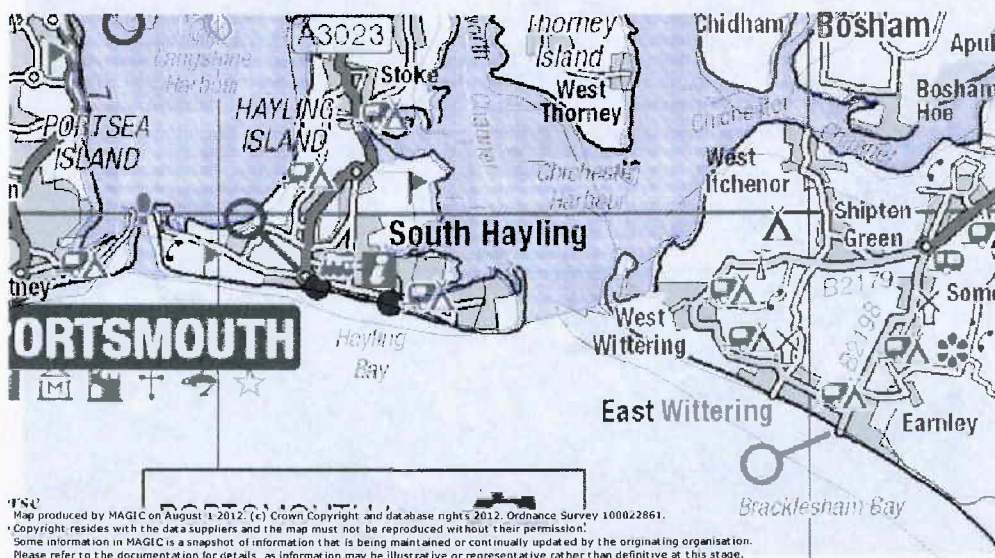


Figure 3.8: Chichester Harbour Shellfish Water designated under the EC Shellfish Waters Directive (2006/113/EEC) Chichester Harbour is split into three Shellfish Waters (Emsworth Channel, Thornham Channel and Chichester Channel). The Chichester Harbour (Emsworth Channel) Shellfish Water is adjacent to the proposed works at Eastoke. Designated area highlighted blue.

Annex 1 of the EC Shellfish Waters Directive (2006/113/EEC) sets out the parameters that are measured to determine the quality of shellfish waters. These are listed below:

- pH;
- Temperature;
- Coloration;
- Suspended Solids;
- Salinity;
- Dissolved Oxygen;
- Petroleum Hydrocarbons;
- Organohalogenated substances;
- Metals;
- Faecal coliforms;
- Substances affecting the taste of the shellfish;
- Saxitoxin.

Of the above, the proposed works could have a short term, localised effect on coloration, suspended solids and petroleum hydrocarbons, however this can be controlled to avoid deterioration below standards for shellfish waters. Any fuels used for equipment will be adequately stored, and machinery will be refuelled in bunded areas. Biodegradable hydraulic oils will be used in plant to ensure any hydraulic pipe leaks would not have a negative effect on shellfish waters or the environment generally.

Changes in colouration of the localised water body could occur, due to shingle movement operations, and this could increase the suspended solids locally, however as the proposed works relate to Chichester Harbour entrance, any localised increase in suspended solids or change in coloration would be quickly diluted by the constant flushing of Chichester Harbour each tide.

The EA will be consulted to ensure any changes in coloration and suspended solids are kept to a minimum, and we will work with their ongoing monitoring programme to ensure no negative effects if considered necessary. Any localised changes in colouration or suspended solid levels would likely be short term, as they would be flushed away from the harbour during falling tides. This would significantly reduce the chance of any impacts on the shellfish water bodies.

The Eastoke Point scheme will not cut off the sediment supply to Black Point, north of Eastoke Point (to the east in terms of longshore drift). One of the key aims of the scheme design, is to maintain this supply, otherwise this would damage natural processes within the harbour and could cause problems to the inner harbour coastline (to the rear of Eastoke). Continued shingle supply to Black Point will

ensure it remains an important high tide roost site, which Chichester Harbour Conservancy is keen to ensure.

The rock groynes that are proposed will be no longer than the existing timber groynes they replace and therefore the sediment pathway will not be significantly affected. In addition they are not built as a terminal groyne, which could act as a complete barrier to sediment.

When new structures are installed, there can be a lag in sediment movement, as shingle needs to build up within the shingle retaining structures before it bypasses the groynes. However, as beach recharge forms a significant part of this scheme, this lag has been removed, as the groynes will be filled with shingle once they are constructed.

Should there be any negative effect on the supply of shingle to Black Point, the rock groynes are adaptable and can be shortened by removing the rock at the seaward end. The sediment transport is closely monitored along this frontage, and this will continue during and after the scheme to ensure no negative effect. The Eastern Solent Coastal Partnership are also developing a BMP for the Hayling Island frontage, working with natural processes to maintain critical quantities of beach material along the Hayling Island frontage.

The identified 0.4ha of habitat loss over the short to medium term as a result of 'holding the line' at this location is being compensated through the Medmerry Managed Realignment Scheme. This has been confirmed by the Environment Agency in a letter relating to the Regional Habitat Creation Programme (Included as Annex 8). This loss to the ecology of the wider Chichester Harbour is considered negligible, as the scheme itself will help maintain the important high tide roost site at Black point, which is key to the wildfowl and waders using the wider harbour.

Flood Defence Consent may be required from the Environment Agency prior to any works commencing.

4.0 Traffic – including navigation

Due to the close proximity of residential property to the storm beach at the Eastoke Peninsula, the free flow of traffic on the surrounding highways has been considered as a potential problem associated with the scheme. Previous successful schemes for this frontage include the Beach Nourishment and Beach Recycling and therefore the traffic restrictions placed on these have been used again for the Eastoke Point Coastal Defence works. There is currently an existing haul route along the top of the

shingle ridge, which is used periodically to transport shingle from east to west during the annual recycling operation (see Annex B). It is therefore unlikely that any proposed scheme will require the creation of additional access points to the beach.

It is recommended that restrictions are placed on the contractor to only allow work between 7.00am and 7.00pm. No machinery will be allowed to be operated outside of those hours, which includes delivery, collection and maintenance. In addition to this, no weekend working or work on recognised Public Holidays will be permitted except in special cases. An exception to this would be marine based activities, for example material arriving on a ship, which would need suitable tidal conditions and would therefore need to be able to operate over a 24hour/day time period. See section 4.7.1 for more details.

In the interest of free flowing traffic on and off the island, restrictions will be put in place so that no delivery to or collection from, the construction site using construction vehicles between the hours of 3.00pm and 9.30am on any day except in special cases. Also, the construction vehicles will be restricted to a specified route of transport to minimise disturbance (see Annex C).

It is expected that the rock armour will be imported by sea and will therefore not cause any traffic problems on the island. It is less certain if the beach nourishment will be imported by sea or land which is dependant on availability of sea bourn plant, exact quantities of recharge required, fuel costs and other market forces . If the beach recharge is less than about 10,000m³ it is likely that it will be carried out by land. If this is the case it would equate to 900 lorry movements probably spread over a 3 month period equating to 14 movements per day. It has to be emphasised that this is very much a worse case.

In addition to the delivery of beach nourishment there will be the incidental deliveries of such items as plant and geotextile but it is anticipated that this will result in no more than five movements per day.

The Development Engineer of Havant Borough Council's Transport and Implementation Team commented that as long as the restrictions detailed above are enforced then the works are **unlikely to have a significant** on traffic and transportation within the surrounding highways.

4.1 Sea transport

The entrance to Chichester Harbour lies adjacent to the study area. This serves fishing boats, pleasure craft, and limited commercial vessels. It is important that any proposed scheme will not adversely affect the dredged harbour channels. Also,

should material arrive by ship, a specific approach route will be agreed in advance with Chichester Harbour Conservancy and disseminated to all local fisherman as has been successfully done in previous years to keep disruption to local seafarers to a minimum (for example, the 2009 Beach Nourishment Project).

The Hayling Island Lifeboat station is located at the eastern end of the study area. Access for launch, recovery and operation of RNLI lifeboats at this site will be maintained during construction works period.

5.0 Noise and Vibration

5.1 Noise

Activity within the study area is limited and, as such, noise levels are typical for a coastal location. Existing noise levels are dominated by the natural sounds of the sea and the wildlife.

Due to the urban nature of Eastoke Peninsula, vehicles and plant on the beach are allowed between 07:00 and 19:00 during the annual recycling operations. Although dependent on the types of operation being carried out, it is thought that any proposed works would also adhere to these time limits to minimise disturbance, although a review would be carried out if any complaints were received.

Renourishment works using dredgers generally operate 24 hours a day. This is to allow for tidal conditions as vessel activity will typically occur 3 hours either side of high water. This may give rise to some disturbance should the proposed scheme include beach recharge by sea; the disturbance would be moderate and of reasonably short duration. In particular, elevated noise levels will occur whilst the vessels discharge their load onto the beach, which is typically over 60 minute periods. In recent years, dredgers have discharged shingle and sand onto the beaches at Eastoke using a “rainbow” technique. If at some future date it was decided to use a pipeline to deliver such materials, this would reduce noise levels during such operations.

5.2 Vibration

Due to the close proximity of the residential properties to the proposed construction area, the movement of operational machinery and the construction works may cause a potential problem through vibration, particularly to the residential dwellings located closest to the operation area (far east of the promenade on the southern frontage) and those dwellings neighbouring the compound at 72 Southwood Road where plant

will be stored. Plant will be delivered to the public carpark at Eastoke Corner well away from any buildings and then tracked/ driven along the beach to be stored at the compound.

In order to limit the disturbance through vibrations, it is recommended restrictions are placed on the contractor to only allow work between 07:00 and 19:00. No machinery will be allowed to be operated outside of those hours, which includes delivery, collection and maintenance. In addition to this, no weekend working nor on recognised Public Holidays, will be permitted except in special cases.

There has also been a change of layout to the compound at 72 Southwood Road that has largely addressed the issue of vibration caused by plant at this location. Plant is now restricted to being stored in the Southern end of the compound away from adjacent houses which has successfully addressed issues with vibration at this location

This document has been reviewed by the Environmental Health Team Leader of Havant Borough Council's Environmental Health Department who commented with regards to Noise & Vibration "...I accept that there may be some problems with vibration in close proximity to certain residential properties but anticipate that provided works are limited to the proposed hours of operation the residents may well take the pragmatic view that it is a price worth paying...". Should complaints arise, the Environmental Health Department would review whether the best practicable means were being taken to minimise disturbance. Therefore we anticipate that the scheme is **unlikely** to have a significant impact on area but may well have some localised impact throughout the construction phase.

Also, consideration is given to the likely affects the construction works may have on the SPA bird species. It is believed that the SPA bird's favoured roosting and breeding grounds are further up in the shelter harbour area, there should therefore be no adverse effects on the designated interest features of these sites. The proposed construction works for the Eastoke Peninsula frontage is based on the more exposed coastal area. A meeting with Natural England and Hampshire County Council's Local Nature Reserve ranger revealed that construction works along the Eastoke Peninsula frontage are likely to have only a 'limited' impact on migratory and breeding birds (see Table 2 for the Conservational Objectives of the SPA).

6.0 Water Quality

6.1 Groundwater

Water resources throughout Hampshire depend on groundwater stored within the Chalk aquifer of the Hampshire Downs. This groundwater is replenished by winter rainfall which percolates down into the water table. It then drains out of the aquifer to provide reliable flows in chalky rivers such as the Test, Itchen and Meon. This water is usually of very high quality and as such requires very little treatment for public supply. No groundwater protection zones are located within the study area.

6.2 Surface water

There are three main surface water features within close proximity to the study area. These are:

- Eastoke Boating Lake – This lies to the north-west of the study area;
- The Solent – The study area is bordered by the Solent; and
- Emsworth Channel – This body of water lies to the east of the study area at the mouth of Chichester Harbour.

6.3 Bathing water quality

The EU Bathing Water Directive (76/160/EEC) imposes statutory objectives on bathing waters. Its two main objectives are:

- To improve or maintain the quality of bathing water for reasons of amenity; and
- To protect human health.

Samples taken during the past 10 years from the sampling point closest to the study area have consistently achieved an excellent rating for all parameters.

West Beachlands Central beach, which is located to the west of the study area, currently holds a “Blue Flag” which is a symbol of high environmental standards as well as good sanitary and safety facilities at beaches and marinas.

During the construction stage, there is potential for suspended solids to affect the turbidity of the water which may impact on the rating. However, once the construction phase is completed, it is considered **unlikely for the proposed design to have a significant impact** on this rating due to the inert nature of proposed construction material.

6.4 South East River Basin District (SERBD) Water Bodies

River Basin Management Plans have been drawn up for river basin districts across England and Wales under the Water Framework Directive. Their aim is to protect and improve the water environment. They contain the main issues for the water environment and the actions needed to deal with them.

The South East River Basin Management Plan sets out the pressures facing the water environment in the SERBD, and the actions that will address them.

Eastoke Point is located at the divide of three coastal water bodies that form part of the SERBD, as illustrated by Figure 6.1:

- Chichester Harbour – GB680705210000;
- Solent – GB650705150000;
- Isle of Wight East GB650705530000.



Figure 6.1: The three coastal water bodies adjacent to Eastoke Point, Hayling Island (from the South East River Basin District).

Data sheets for these three water bodies are included as Annex 7, which includes details on the ecological potential and status of the water body. The Solent and Chichester Harbour water bodies both have current overall potential of moderate, whereas Isle of Wight East has a good current overall potential. Table 6.1 summarises the quality and status of these three water bodies.

Table 6.1: Quality and status of water bodies adjacent to Eastoke Point, Hayling Island

Name of Water Body	Solent	Chichester Harbour	Isle of Wight East
ID	GB650705150000	GB680705210000	GB650705530000
Current Overall Potential	Moderate	Moderate	Good
Status Objective (overall)	Good by 2027	Good by 2027	Good by 2015
Status Objectives	• Good ecological potential by 2027; • Good chemical status by 2027	• Good ecological potential by 2027; • Good chemical status by 2015	• Good ecological potential by 2015; • Good chemical status by 2015
Ecological potential	Moderate	Moderate (uncertain)	Good
Chemical status	Fail (uncertain)	Good	Good
Heavily modified?	Yes, due to coastal and flood protection	Yes, due to coastal protection, navigation and shellfisheries.	Heavily modified due to coastal and flood protection

As can be seen by Table 6.1, the Isle of Wight East water body is currently in compliance with the WFD overall aim of Good Ecological Potential. The Solent and Chichester Harbour water bodies are not currently compliant with the WFD objective overall aim of Good Ecological Potential, but the status objectives of both water bodies is to achieve this by 2027. For all three water bodies, mitigation measures have been identified to help achieve / maintain Good Ecological Potential and these are summarised in Table 6.2.

Table 6.2 Mitigation measures to help achieve / maintain good ecological potential

Mitigation Measure	Chichester Harbour	Isle of Wight East	Solent
Vessel Management	X		
Manage Disturbance	X	X	X
Site Selection (dredged material disposal) (e.g. avoid sensitive areas)	X	X	X
Alter timing of dredging / disposal	X		
Prepare a dredging / disposal strategy	X		
Indirect / offsite mitigation (offsetting measures)	X		X
Retain marginal aquatic and riparian habitats (channel alteration)	X		
Preserve and where possible enhance ecological value of marginal habitat, banks and riparian zone	X		X
Managed realignment of flood defence	X		X
Removal of hard bank reinforcement / revetment, or replacement with soft engineering solution	X		X
Sediment Management		X	X
Bank rehabilitation / reprofiling		X	
Remove obsolete structure		X	

The proposed Eastoke Point scheme is not expected to impact upon the overall ecological quality of the three water bodies. The works are an improvement of what already exists to extend the life of the beach retaining structures that are in need of renewal. Therefore no habitat is being lost as a direct result of the works as the line of defence will not change. Ongoing maintenance of the beach through recycling and recharge is a continuation of current management practices at Eastoke Point. Therefore risks to the water quality arising from the project are not expected to be significant.

There is the potential for the scheme to contribute towards a failure to achieve the objective of Good Ecological Potential for Chichester Harbour and the Solent by 2027, as aspects of the scheme do not conform with the mitigation measures identified for the water bodies. This is considered negligible, as:

- The extent of the proposed works is minimal relative to the scale of the water body as a whole;
- The key elements of the scheme (rock revetment / groynes) are adaptable, and can be moved to provide localised enhancement / create new habitat if necessary;
- Although the line of defence will be fixed, previous engineering and beach management works have held this line of defence since at least 1946 when the first sea wall was installed at Eastoke Point. Historically the seawall led to undermining and beach lowering, and the proposed rock revetment and groynes will respond much better to wave attack, preventing the wave reflection and beach lowering / habitat losses experienced historically;
- Option development is in line with SMP policy of 'Hold The Line' and the Hayling Island: Eastoke Point Sectoral Strategy Study for the 'Southern Frontage – Eastoke Point' of 'Hold The Line to provide protection to a 0.5% Standard Of Protection'. The scheme has therefore met the specific environmental and flood risk management requirements for the frontage within which the site is located.

Whilst the extent of the proposed works is minimal in relation to the entire water bodies, the proposed scheme may contribute towards cumulative adverse effects due to the overriding long-term management policy of 'Hold The Line' for much of the Solent. The assessment of potential cumulative impacts should be undertaken at the water body scale, and is therefore beyond the scope of this environmental statement.

7.0 Landscape and Visual Amenity

In order to identify the potential visual impact of the proposals, a full Landscape and Visual Impact Assessment was carried out by the Councils Landscape Architect. The report is an accompanying document to the planning application.

The report looks at the various landscape designations and character assessments that cover the area and assess the effects of the scheme on the local area. It looks in detail at the local area, its characteristics and the main sensitive receptors likely to be affected by the proposals.

The Report concludes that the proposed sea defences could be successfully accommodated within the landscape without causing significant harm to the surrounding landscape character, visual amenity or landscape elements of the area.

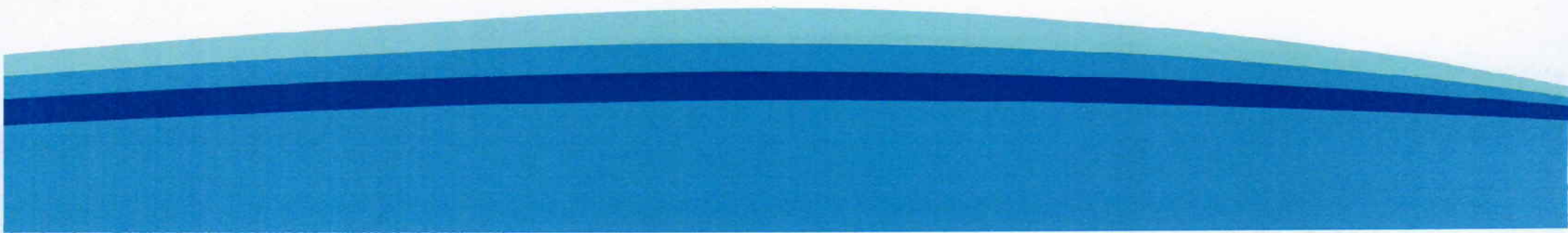
8.0 Conclusions

The Eastoke Point Scheme has the potential to effect various designated species and habitats during construction activities, however these can be controlled, as set out throughout this statement. Any negative effects are expected to be short term, very localised and a full recovery is expected. For some key features, the scheme could be of benefit, and various environmental opportunities have been highlighted, such as seed collection and dispersal to improve the vegetated shingle communities, which will benefit from a more stable beach, allowing the vegetation to become better established.

Table 8.1 summarises the key construction activities that will take place to deliver the scheme, to highlight how they could effect the designated species and habitats, and how any effects could be mitigated. The table goes on to highlight the resultant effect, once the mitigation measures have been incorporated.

In summary, well planned and managed construction activities are expected to have a short-term localised effect on the environment, which will recover in the short – medium term, with the potential for an enhanced local environment.

Construction activity that may result in this effect													
Potential effect of scheme on designated species / habitats	Excavation of beach material and stockpiling	Importation of rock armour by road or sea	Placing of Rock Armour	Laying of geotextile	Filling of beach and rock armour	Import of beach recharge by land or sea	Concrete paving and steps to new access / drainage points	Resurfacing of promenade	Concrete repairs and coating of sea wall	Stop log improvements at Bosmere Road	Pedestrian Ramp at Bosmere Road	Mitigation	Resultant effect
Disturbance to nesting pair of Ringed Plover, which return annually	x	x	x	x	x	x						Time construction activities to avoid disturbance, and fence area off to protect eggs from trampling – to shorten nesting period.	A quicker and potentially more successful nesting period due to trampling being prevented.
Loss of vegetated shingle habitat.	x		x	x	x							Map and record species in works area. Requirement in works contract to prevent unnecessary damage. Areas to be protected will be fenced off. Seed collection and	Short term loss of vegetated shingle / potential long term gain



											dispersal programme pre and post construction works. Development of critical beach volume, suitable for vegetated shingle development.	
Changes to the Shingle Spit	x		x		x						The scheme itself, will maintain a supply of shingle to the spit, which will help maintain it as a feature. Without beach recharge and recycling, the spit could fail over time if the supply of shingle diminishes.	The spit maybe more stable as a result of these works due to an ongoing feed of sediment.
Localised pollution to water bodies	x	x	x		x	x					Contractor will be requested to provide a written method statement and construction environmental management plan to highlight how water, amongst other	Pollution prevented

												environmental aspects would be protected during construction	
Chichester Harbour Shellfish Water (particularly Emsworth Channel)	x	x	x		x	x						Fuels will be adequately stored, and machinery refuelled in bunded areas. Biodegradable hydraulic oils will be used in plant to ensure any hydraulic pipe leaks do not have a negative effect on shellfish waters or the environment generally. Changes in coloration or suspended sediments due to shingle works would be short term, and quickly diluted by the flushing action of Chichester Harbour. The Environment Agency will be consulted to ensure changes are minimal, and works will be	Proposed works could have a short-term localised effect on coloration and suspended solids. Not expected to affect shellfish waters.

												completed in line with their ongoing monitoring programme.	
Water Bodies	x	x	x		x							The scheme is not expected to impact on the overall ecological quality of the three water bodies (see Section 6.4)	No negative effect.
Habitat loss (saltmarsh / mudflat)			x		x							It is believed 0.4ha of habitat may be lost due to holding the line. Compensated through Regional Habitat Creation Programme through the Medmerry managed realignment scheme. This has been confirmed by the Environment Agency (Annex 8).	Localised loss of habitat, compensated elsewhere

Table 8.1 summary of the key construction activities that will take place to deliver the scheme, highlighting how they could effect the designated species and habitats, and how these effects could be mitigated.