

HAYLING ISLAND BEACH MANAGEMENT PLAN

Water Framework Directive Assessment

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Revision 1.0
March 2017

Havant
BOROUGH COUNCIL



**EASTERN
SOLENT** | **COASTAL
PARTNERSHIP**

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EXECUTIVE SUMMARY

This Water Framework Directive [WFD] Assessment has been prepared for the proposed future Beach Management Plan (BMP) works on the South Coast of Hayling Island, as an integral element of the Environmental Statement.

BMP activities have been undertaken along this frontage for many years (following an initial large shingle recharge in 1985). The revised BMP (2017-22), for which we are now seeking planning permission and a Marine License, covers historic BMP activities and an extended area to combine the full South Hayling Island coastal sediment cell into the plan.

This WFD assessment provides an overview of the WFD, a summary of the proposed Beach Management Activities and information on the WFD water bodies and wider European protected sites that could be affected by the scheme, including Shellfish Waters, Bathing Waters, and Natura 2000 sites. It also promotes opportunities to meet WFD / Water Body Objectives.

Using this background information, an impact assessment has been completed to demonstrate whether the works could impact the adjacent WFD water bodies, their objectives and the wider protected sites. Where a potential impact could occur, mitigation measures have been identified to reduce, or remove that impact, thereby allowing a conclusion of whether or not deterioration will occur.

This impact assessment considers all the potential impacts, alone and 'in-Combination'.

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ACRONYMS

EA	Environment Agency
ESCP	Eastern Solent Coastal Partnership
HBC	Havant Borough Council
HMWB	Heavily Modified Water Body
HRA	Habitat Regulations Assessment
HTL	Hold The Line
LPA	Local Planning Authority
LSE	Likely Significant Effect
MMO	Marine Management Organisation
NE	Natural England
RBD	River Basin District
RBMP	River Basin Management Plan
RHCP	Regional Habitat Creation Programme
SMP	Shoreline Management Plan
WFD	Water Framework Directive
BMP	Beach Management Plan
FCERM	Flood and Coastal Erosion Risk Management
SE RBD	South East River Basin District
GES	Good Ecological Status
GEP	Good Ecological Potential
INNS	Invasive Non Native Species
AEP	Annual Exceedance Probability
HISC	Hayling Island Sailing Club
SAC	Special Area of Conservation
EIA	Environmental Impact Assessment
SPA	Special Protection Area
CEMP	Construction Environmental Management Plan
pSPA	Proposed Special Protection Area
EQSD	Environmental Quality Standards Directive
UWWTD	Urban Waste Water Treatment Directive

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1. INTRODUCTION

1.1 South Hayling Island Beach Management Plan (BMP) Activities

The proposed South Hayling Island Beach Management Plan for which this Water Framework Directive [WFD] Assessment has been prepared, covers the entire length of the south Coast of Hayling Island, and also the entrances into both Chichester and Langstone Harbours.

Havant Borough Council [HBC] / Eastern Solent Coastal Partnership [ESCP] are responsible for managing the coastal defences on the South Coast of Hayling Island. The Strategic direction for the management of this stretch of coast has been set out in the:

- North Solent SMP (SMP, 2010).
- Eastoke Sectoral Strategy, which was undertaken in two stages:
- Eastoke Sectoral Strategy Study, (Atkins, 2006).
- Eastoke Point Coastal Defence Study. (HR Wallingford , 2008).

The North Solent SMP, which was approved in 2010, recommends a policy of 'Hold the Line' for the whole of the South Hayling Island open coastline. The Eastoke Sectoral Strategy (Atkins, 2006), which covers the whole of the Eastoke Peninsula was approved and adopted in 2006, also recommending 'Hold the Line' to a 1 in 200 year (0.5% annual) standard of tidal flood protection through beach management along the main southern frontage.

HBC have undertaken beach management activities at South Hayling Island since a large beach nourishment scheme in 1985, but not along the full open coastline, hence this new application. **Figure 1.1** illustrates the area of historic BMP activities (red line), compared to the future proposed BMP extent (blue line).

Beach management activities in the form of recharge and recycling reduce the flood and erosion risks to the Hayling Island coastline in combination with existing shingle retaining structures, such as revetments and groynes. Sediment is currently recycled from areas of accretion (generally from the west of the area) to areas of erosion (at Eastoke). When material is lost from the system, new material is required on occasion, via offshore dredges or by road (recharge).

The beach, which acts as the primary coastal flood and erosion defence, provides protection to a significant number of people, 1,555 residential properties, 170 commercial, infrastructure and key features of the environment. The BMP is the strategically adopted preferred Flood and Coastal Erosion Risk Management (FCERM) approach, as it is considered environmentally, economically and technically viable.

This WFD Assessment relates to and is a supporting document to the Environmental Statement, to advise the planning and marine license applications.

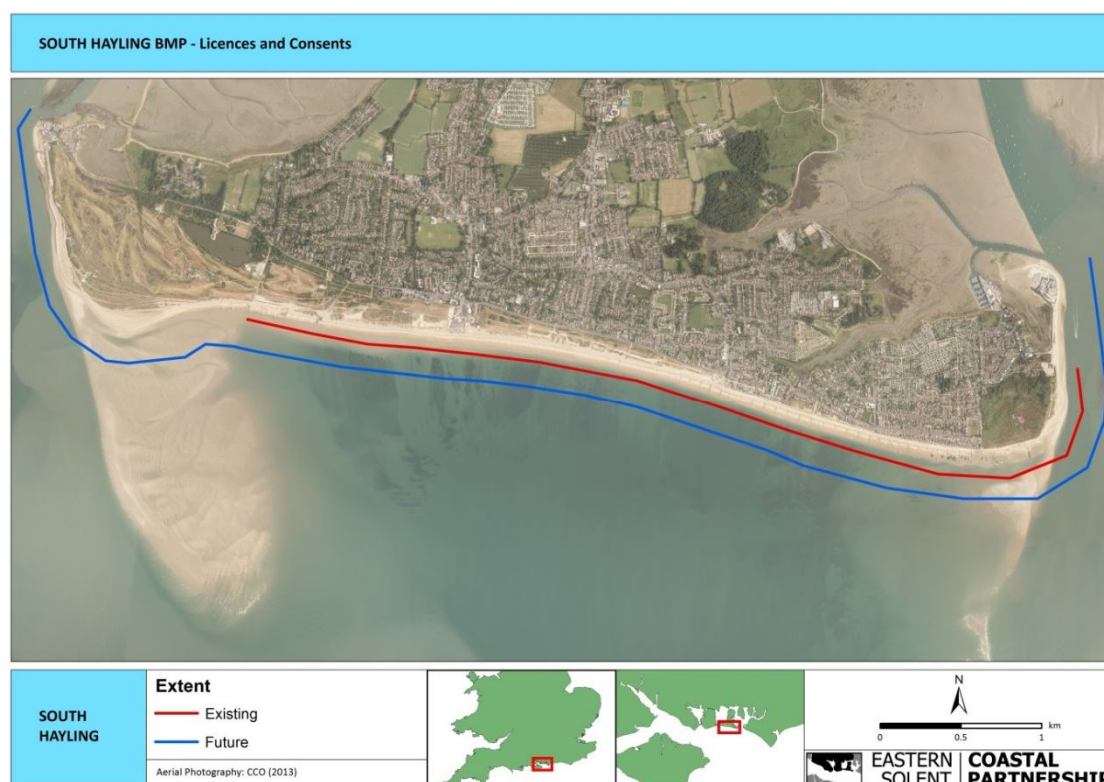


Figure 1.1 Existing and proposed BMP area. This WFD assessment considers the full extent of the blue line.

1.2 Water Framework Directive [WFD] Assessment

The purpose of the WFD is to establish a framework for protecting inland surface waters, transitional waters, coastal waters and ground waters. The framework for delivering this Directive is through the River Basin Management Plans [RBMPs].

This WFD assessment has been prepared for the ongoing and geographical extension of the South Hayling Island Beach Management Plan (BMP), which will deliver the Policy of HTL, as adopted within the SMP (SMP, 2010) and the Eastoke Sectoral Strategy (ESCP, 2013). The site falls entirely within the South East River Basin District [SE RBD] and the scheme itself is mainly within the Solent Water Body and Chichester and Langstone Harbour Water Body. It is also adjacent to the East Isle of Wight Water Body. This assessment will identify whether the scheme has the potential to prevent these Water Bodies meeting their Objectives, and will identify and promote the delivery of any mitigation measures that may be required. It will also consider scheme impacts on other European protected sites, including Shellfish Waters, Bathing Waters and Natura 2000 sites.

Guidance to undertake this Water Framework Directive Assessment was provided by the Environment Agency [EA] (the competent authority for delivering the WFD Directive) in the new guidance for assessing impacts in the marine and coastal environment (December 2016). This assessment has expanded on the WFD assessment undertaken for the North Solent Shoreline Management Plan (NFDC, 2010) and will take advice from other local FCERM schemes, including Eastoke Point, Hayling Island (ESCP, 2013). The updated south Hayling Beach Island Management Plan 2017-22 (2017), has divided the coast up into manageable sections (Beach Management Plan Units 1 to 8) to aid understanding and enable consideration of impacts. These are illustrated in **Figure 1.2**. The assessment process is explained below but, in summary, the following is provided:

- an overview of the WFD process and methodology for assessment;
- Information on the proposed Beach Management Activities;
- Background information regarding relevant water bodies and protected sites;
- Scoping Exercise using the Environment Agency new guidance
- Assessment of potential impacts and mitigation;
- Contributions towards achieving water body objectives;
- Conclusions.

Figure 1.2 South Hayling Island BMP extent, detailing the BMP units referenced throughout this report



2. OVERVIEW OF THE WFD ASSESSMENT PROCESS AND METHODOLOGY FOR ASSESSMENT

2.1 Overview of the WFD

In December 2003, The Water Framework Directive [WFD] (2000/60/EC) was transposed into national law by means of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. These Regulations provide for the implementation of the WFD, from designation of all surface waters (rivers, lakes, transitional (estuarine) waters, coastal waters and ground waters) as water bodies, to the requirement for the achievement of Good Ecological Status [GES] or Good Ecological Potential [GEP] by 2015. The River Basin Management Plans have now been updated and the objectives are now set for 2021; if they are achievable and fully funded or 2027 if there is less certainty in a means of achieving the status.

Unlike the Birds Directive (2009/147/EC) and Habitats Directive (92/43/EEC), which apply only to designated sites, the WFD applies to all water bodies, including those that are man-made. The assessment of the proposed construction works under the WFD, therefore, will apply not only to the water bodies within which construction will take place but also to other water bodies that have the potential to be impacted by the scheme (e.g. those adjacent to the water bodies in which a scheme is located).

Classification schemes for both transitional and coastal waters out to one nautical mile have been developed by the Environment Agency in response to the WFD. The schemes classify the status of transitional and coastal waters using information on the ecological, chemical and hydro morphological quality of a body of water.

Article 4 of the WFD stipulates that any new modification which has the potential to alter the hydro-morphology or other characteristics of a water body should not cause deterioration in the ecological status or potential of a water body, or prevent it from achieving its objectives as detailed in the RBMP. Where this cannot be achieved, the scheme must meet all the conditions in

Article 4 to be legally compliant. The four WFD environmental objectives taken from article 4 of the WFD are:

WFD1	No changes affecting high status sites.
WFD2	No changes that will cause failure to meet surface water Good Ecological Status or Potential or result in a deterioration of surface water Ecological Status or Potential.
WFD3	No changes which will permanently prevent or compromise the Environmental Objectives being met in other Water Bodies.
WFD4	No changes that will cause failure to meet good groundwater status or result in deterioration in groundwater status.

The WFD recognises that physical alterations may have been undertaken to support the use of a water body for a particular purpose (e.g. for flood defences). This may lead to the water body being designated as Heavily Modified Water Bodies [HMWB].

The requirements of the WFD need to be considered at all stages of FCERM planning and development, from high level plans such as SMP's to design and construction of FCERM schemes on the ground. In addition to the above objectives, there is an overall duty to enhance and restore water bodies. Therefore, schemes and strategies should actively contribute to the water body objectives of the RBMP.

The WFD also sets out specific mitigation measures for each River Basin District [RBD]. These measures are to mitigate impacts that have been, or are being caused by human activity. These mitigation measures aim to enhance and restore the quality of the existing environment and need to be explored where unavoidable impacts are expected from the delivery of FCERM policy and schemes.

The WFD aim is for all water bodies to be at good status. In a WFD assessment you must show if your activity will:

- cause or contribute to deterioration of status
- jeopardise the water body achieving good status

This is achieved by determining if the works could cause deterioration of the ecological status or potential of the affected water bodies. Ecological Status is defined by the biological, physio-chemical and hydro-morphological elements of the water body. This takes into account specific aspects including the abundance of aquatic fish, flora and fauna as well as quality elements such as salinity, temperature, availability of nutrients and pollution, as summarised below;

Quality Elements	Description
Biological Assessment	Uses numeric measures of communities of plants and animals (for example fish and rooted plants).

Physio-chemical assessment	Looks at elements such as temperature and the levels of nutrients, which support the biology.
Hydro-morphological	Looks at water flow, sediment compositions and movement, continuity (in rivers) and the structure of physical habitat.

In addition, the chemical status of water bodies is defined by compliance with environmental standards for chemicals that are priority substances and/or priority hazardous substances, in accordance with the Environmental Quality Standards Directive. This is assigned on a scale of good or fail. Surface water bodies are only monitored for priority substances where there are known discharges of these pollutants; otherwise surface water bodies are reported as being at Good chemical status.

Where sites are protected under other European Legislation, such as the Habitats, Birds, Shellfish Waters and Bathing Waters Directives, the WFD also sets standards to ensure compliance with any relevant objectives for these sites. For sites where more than one quality standard applies, compliance with the stricter standard is required.

2.2 The WFD Assessment process

The Environment Agency has recently issued guidance 'Water Framework Directive assessment: estuarine and coastal waters Summary: How to assess the impact of your activity in estuarine and coastal waters for the Water Framework Directive (WFD).

A WFD assessment can have up to 3 stages. The result of each stage determines if the next stage needs to be completed, not all stages need to be completed. The stages are

- screening – excludes any activities that don't need to go through the scoping or impact assessment stages
- scoping – identifies the receptors that are potentially at risk from your activity and the need for an impact assessment
- impact assessment – considers the potential impacts of your activity, identifies ways to avoid or minimise impacts, and shows if your activity may cause deterioration or jeopardise the water body achieving good status

The new guidance has been followed to undertake this assessment and certain impacts scoped out or in for further assessment. The main consideration in carrying out this assessment is that the work is a continuation

of works that have been taking place in one form or other since 1985. As the works are going to be continued although the geographical area increased the potential impacts will remain the same. Since 1985 there has been no recorded deterioration in waterbodies status.

2.2.1 Screening: excludes any activities that don't need to go through the scoping or impact assessment stages.

If the activity is classified as a low risk activity; scoping does not need to be carried out. Low risk activities include 'over water' replacement or repairs to, for example bridge, pier and jetty surfaces, providing measures are taken to minimise bank or bed disturbance.

2.2.2 Scoping: identifies the receptors that are potentially at risk from your activity and the need for an impact assessment.

At the scoping stage all the activity's potential risks to each receptor, must be identified. The receptors are:

- hydro-morphology
- biology – habitats
- biology – fish
- water quality
- protected areas
- invasive non-native species (INNS).

2.2.3 Scoping template

In the guidance it state that the scoping template should be included as part of the WFD assessment.

2.2.4 Impact assessment: considers the potential impacts of your activity, identifies ways to avoid or minimise impacts, and shows if your activity may cause deterioration or jeopardise the water body achieving good status

An impact assessment must be carried out for each receptor identified during scoping as being at risk from the activity taking place. Then the pathway linking the pressure to the receptor is assessed. If no pathway is identified then there can be no impact on the receptor and then there is need to carry out any further assessment of that receptor. If there is a potential pathway assessment needs to take place on activity and the pressure it creates on the receptor. The assessment must consider mitigation both avoiding and minimising of impacts. It should then include an in-combination assessment of other activities that could affect the same receptors, both now and in the future.

2.2.5 Assessment for deterioration

Deterioration is when the status of a quality element reduces by one class. For example, biological quality elements from good to moderate status. If a quality element is already at the lowest status then any reduction in its condition counts as deterioration. However of particular relevance to this assessment, temporary effects due to short-duration activities like construction or maintenance don't count as deterioration if the water body would recover in a short time without any restoration measures.

The assessment of deterioration must then consider if impacts are;

- direct and immediate
- indirect
- Is the activity the sole cause of the deterioration, or whether other activities in the affected water bodies may together cause the deterioration
- identify ways to avoid the impact.
- identify ways to minimise the impact.

2.2.6 Assessment of impacts on protected areas

How the activity will impact each protected area, identify pathways and any impacts can be avoided minimised

If your activity will impact on a Natura 2000 site, you may have completed a Habitats Regulations Assessment.

2.2.7 Assess for invasive non-native species (INNS)

Could the activity create a pathway to introduce an increased risk of introducing or spreading any INNS.

2.2.8 Jeopardising good status

Every water body has a target status that it's expected to achieve by a set date. You must consider if the activity will jeopardise the water body getting to its target status.

2.2.9 Jeopardising mitigation measures

Then need to demonstrate that the activities won't jeopardise the mitigation measures in place now or planned for the future.

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3. BACKGROUND TO THE PROPOSED CFERM SCHEME

3.1 Introduction

This WFD assessment relates to the ongoing beach management works at South Hayling Island. Although the geographical areas for the beach recycling is being extended to cover the entire sediment cell, the potential impacts and sources of impacts and receptors have not changed. **Section 4 of the Environmental Statement** contains full details of the BMP activities, and also links back to the BMP Technical report itself.

3.2 Strategic background

The overall coastal defence policy for this frontage was established in 1996 in the East Solent Shoreline Management Plan (SMP) and reconfirmed during the North Solent SMP in 2010 as 'Hold the Line'. This was considered to be the preferred environmental, technical and economically viable strategic option, and was therefore adopted. In-between the two SMPs, a Sectoral Strategy study was also completed, focussing in detail on Eastoke itself.

3.3 Coastal Flood and Erosion Risk Management Option Selection

The Eastoke Sectoral Strategy Study assessed and compiled the information and data to develop a comprehensive, sustainable strategy for which the aim was to promote technically, environmentally and economically sound defence measures for the coast. It promoted a 'Hold the Line' policy for the frontage and recommended that the defences are improved to give a standard of protection of 0.5%, i.e. protecting the assets at risk from storm events with a return period of 200 years through beach management. In order to do this, it underwent an options appraisal process, as set out below:

3.3.1 Long list of options

The following long list of options was examined in the Strategy: Beach Management, Rock Revetment & Rock Groynes, Replacement Seawall, Offshore Breakwater, Inland Flood Defences, Beach Recharge, and No Action. This long list option selection process identifies all potential options for management of this coastline, regardless of technical, economic and environmental feasibility.

3.3.2 Short list options

The shortlist takes forward the technically, environmentally and economically viable long list solutions for the frontage. The shortlist evaluates the use of Beach Management to adequately provide and maintain the required standard of coastal flood and erosion protection to Eastoke. This operation has been undertaken regularly since the 1985 Hayling Island Beach Replenishment Scheme and the methodology and associated risks with the works are well understood. Therefore the 'Do Something' option adopts a consistent approach to sourcing, transporting and placing beach material, to achieve the required standard of protection. The options were appraised based on cost, technical viability and environmental impact. Below is a summary of the technical assessment of the short list options:

- **Do Nothing:** This scenario is used as a baseline for calculating damages and the benefit cost ratio. Do-nothing is assessed as it assumes that no action is undertaken, thus the baseline has zero costs (costs here being defined as the capital or revenue costs of actions or interventions). It presumes that the defence is not maintained over its life. In this scenario there is a high likelihood of rapid beach drawdown, leading to heavy wave overtopping, putting the residents of Eastoke at great risk.
- **Do Minimum:** This scenario is used as a baseline for calculating damages and the benefit cost ratio. Do-Minimum considers the consequences of adopting a minimum level of investment using Havant Borough Council revenue funds only. In an attempt to protect the most vulnerable sections of the frontage at Eastoke Corner and Creek Road, beach material would be bulldozed up from the lower beach, to form a small beach crest. Thus this option has relatively low cost and would be limited to the most critical areas at Eastoke. This approach would lead to an overly steep beach profile and a

crest of insufficient size, causing rapid beach draw-down, heavy overtopping, and putting the 1555 residential properties behind the defences at great risk.

- **Option 1 – Beach Management 1:75 SoP (1.33% AEP):** This option identifies the maintenance of a managed beach crest 9m wide in front of the existing sea wall to achieve a 1.33% AEP (1:75 year) standard of protection. Using the current approach to beach recycling, beach levels would be maintained through a combination of beach recycling from the open beach, dredging (local or offshore sources) and through import of marine gravel via road to meet any shortfall. These sources have all been successfully utilised in the past to maintain a healthy beach.
- **Option 2 – Beach Management 1:100 SoP (1% AEP):** Like Option 1, this option identifies the maintenance of a managed beach crest in front of the existing sea wall, but with an increased crest width of 14m to achieve a 1% AEP (1:100) Standard of Protection.
- **Option 3 – Beach Management 1:200 SoP (0.5% AEP):** Like Option 1, this option identifies the maintenance of a managed beach crest in front of the existing sea wall, but with an increased crest width of 18m to achieve a 0.5% AEP (1:200) Standard of Protection. Option 3 is the preferred option in the Eastoke Sectoral Strategy and the current preferred Beach Management Option in the 2012 and 2017 Beach Management Plan.

3.3.3 Preferred Option

Each short list option was analysed to confirm its environmental, technical and economic feasibility. The selection of the final preferred option from the above short list was based heavily on the environmental impacts of each, taking advice from our statutory and wider stakeholders and technical experts. Consideration was given to:

- The historic environment;
- Landscape;
- Designated Sites
- Soils;
- Water;
- Flora / Fauna;
- Construction, etc.

The beach management options were assessed against environmental impacts (positive and negative), to ensure they are acceptable to the environmental receptors considered. All the short list options share positive and negative environmental effects as well as mitigation and enhancement opportunities.

The preferred option to deliver the strategic policy of 'Hold The Line' is Beach Management, 1:200 SoP (0.5% AEP). In developing the BMP, we have not considered alternatives to Beach Management (i.e. have not repeated the strategic work), but have instead considered alternative sources of beach material / combinations of sources to effectively manage the beach. This is to ensure the BMP remains technically, environmentally and economically sound.

Eastoke has been subject to significant Beach Management Activities since 1985, after a large scale re-nourishment of the whole frontage. The past ten years have seen efforts co-ordinated by the implementation of Beach Management Plans, providing more structure to regular maintenance and supported scientifically by a programmed monitoring regime.

3.3.4 Delivery of the preferred option: BMP 2017-22

The South Hayling Island BMP (ESCP, 2017) was approved by the EA in February 2017. It is a review and update of the Environment Agency approved 2012 BMP (ESCP, 2012), with both plans written by the ESCP. The existing area covered by existing consents and licences is the area covered by the blue line on Figure 1.1, and the red line indicates the area that the works will be extended to, to include the entire sediment cell.

Whilst the boundaries of the BMP have been extended, there will be restrictions on the activities in certain areas. This is in line with discussions that have been held with Natural England and others to ensure that the sensitive environmental receptors are protected; in particular the high tide roost sites and the fragile vegetated shingle habitats towards the harbour entrances. These are set out in detail in the BMP's Habitat Regulations Assessment (HRA).

Although the South Hayling Island BMP considers the wider Hayling frontage from Hayling Island Sailing Club round to the Ferry Boat Inn, the scheme is focused on delivering flood and coastal erosion protection to the Eastoke Frontage, as this is the area of greatest flood risk.

The scheme aims to maintain the beach volumes and profiles at Eastoke to

provide a 1 in 200 year Standard of Protection to homes, properties and infrastructure on the Eastoke Peninsula (as set out in the BMP Technical report – Appendix A of the Environmental Statement). This will be achieved through beach recycling and replenishment, using various sources of material. The recycling can be from the beach itself or through the beneficial reuse of the dredged material from the Chichester Harbour approach channel dredge (same sediment cell). Replenishment would be via offshore sources. These potential sources are set out below; however **Section 4 of the Environmental Statement** includes BMP unit by unit details of operations.

3.3.5 Recycling Shingle within the Hayling Island open coast sediment cell

Recycling involves mechanically moving the material from areas of accretion back to areas of erosion to maintain the design height and structural integrity of the beach and therefore the flood defence.

There are six potential sourcing areas of shingle for recycling within the South Hayling Island open coast sediment cell; these are (Illustrated by **Figure 3.1**):

1. The Ness (open coast);
2. Coastguard Revetment (open coast);
3. The Open Beach;
4. West Beach (open coast);
5. Gunner Point (open coast);
6. Chichester Harbour Approach Channel (beneficial use of dredged material).

Our preference is always to recycle material from within the sediment cell; however there are ongoing natural losses from the sediment cell to offshore. From time to time, there is a requirement to bring in additional material from outside of the sediment cell, referred to as 'Recharge'.

3.3.6 Recharging Shingle from outside of the sediment cell

Recharging shingle onto the beach at Eastoke from outside the sediment cell, involves bringing material in from offshore licenced aggregate sites. This can be undertaken directly using a hopper barge, or indirectly where the material is transported to a local aggregates wharf, the material is then brought to the beach by road.

3.3.7 Mechanisms for Depositing the material onto the beach

There are two mechanisms for moving and then depositing material onto the beach within the deposition areas:

- a) Mechanically moving shingle: Excavating the material from the areas of accretion, transporting the shingle in dumper trucks back to the areas of erosion. The material is then deposited on the beach and re-profiled using bulldozers. Alternatively for Beach Recharge, material is transported to site by road, deposited in the Eastoke carpark and then moved to the nourished frontage using dumper trucks.
- b) Pumping Shingle ashore directly from a barge: Rainbowing (see **Photo 3.1**). This mechanism for moving shingle directly from the Marine Environment (both recycling and recharge) is carried out through a technique called Rainbowing. Here, sediment is pumped ashore directly from the dredging hopper barge. To allow the barge to get access to the shore this operation must take place at high tide (1 hour either side of high tide).

Photo 3.1 Example of shingle being 'Rainbowed' ashore at Eastoke



3.3.8 Assessment of utilising the different sources of shingle in beach management (See Figure 1.2 for spatial illustration of BMP units)

1) Recycling from the Ness (BMP Unit 1-2): The “Ness” is just north of the Nature Reserve at Eastoke Point. Extensive monitoring, undertaken in-house by the ESCP, has shown that this area historically accumulates material carried easterly from the drift divide at Creek Road. Material protruding into the channel is removed to make the navigation safe and to avoid it being eroded by the ebb dominant tide and deposited on the bar across the entrance channel. Material from this area has a higher sand content and tends to cliff if left exposed on the front face of the nourished beach. Extraction of this material now depends on the quality (coarseness) of the material and whether a haul route needs to be constructed over the Eastoke Point rock revetment for the plant to access the “Ness”. Extraction takes place at spring low tide, by a long arm excavator, above the tide line.

2) Recycling from the Coastguard Revetment; 3) the Open Beach; 4) West Beach (BMP units 4 and 5): The wide shingle storm beach in the centre of Hayling Bay is a good source of material, especially the coarse berm that often forms just above MHW. The ESCP undertake surveys before any beach management operation to identify areas that have accreted over the previous year. Beach material can be extracted from the face of the storm beach and care must be taken not to reduce the berm height or width, particularly just east of Inn-On-The- Beach. In addition, there is vegetated shingle on the beach crest which must not be disturbed during recycling operations. This will be surveyed prior to any Beach management operations to protect the vegetated shingle (highlighting areas where access and extraction of material must be avoided).

There are two main extraction areas behind sloping revetments in the study area; one at the coastguard station and one at west beach (to the west of the “Inn on the Beach”). Material is periodically thrown over the structures by storm waves and thereby removed from the sediment transport system. This material is usually coarser, well sorted gravel that performs well as a front face to the nourished beach crest. This source may reduce if the remaining sections of timber revetment west of the “Inn on the Beach” are removed on health and safety grounds. The same applies to the Coastguard revetment, if this structure were deemed to be redundant and removed on health and safety grounds. In both incidences, material would initially be released into the system but no longer provide a possible recycling store. The beach profile would be more natural however.

5) Recycling from Gunner Point (BMP units 6 – 7): Gunner Point at the far western end of Hayling Island has been a sediment store since the beginning of the 20th century. With a large proportion of imported material travelling west from the drift divide at Eastoke, Gunner Point has accreted

substantially since the 1985 replenishment and continued BMP activities (approximately 20,000 m³ per year since 2003). Gunner Point is therefore an excellent source of material for recycling back to Eastoke given the mix of native and imported material that has built up largely as a result of our historic beach management activities. Unit 6 has been extracted from on one previous occasion as part of emergency works. The extraction from this area BMP U 6 and 7 is the area of the extension of these works.

6) Recycling from Chichester Harbour Approach Channel – Beneficial use of dredged material: This material is only available when the Chichester Harbour Master requires the Chichester Harbour Approach channel to be dredged. This in turn is dependant on maintaining a safe navigable depth into the Harbour. Bathymetric surveys will determine when the dredge is required.

This WFD assessment and the BMP will not consider the implications of the dredge itself, as this is undertaken by the Chichester Harbour Master under the powers for safe navigation. Only the deposition of the sediment and the beneficial reuse of the dredged material will be considered within this report. The material will be deposited on the beach at high tide by rainbowing it ashore. This material is then either re-profiled using bulldozers, or left for the natural processes to reshape. The material found within the approach channel is also from within the same sediment cell. The material moves into Chichester Harbour mouth at the Ness and is then transported out to the approach channel. For this reason it is an excellent native and clean source of material.

7) Recharge directly via Hopper Barge: If required, marine based sediment can be transported in by barge and rainbowed ashore. Such offshore sources of sediment will be chosen ensuring that the sediment properties are as close as possible to those already found on the beach.

8) Recharge Indirectly by Road

If required, additional marine based sediment can be transported in by road from aggregate wharfs in close vicinity. Sediment will be chosen ensuring that the sediment properties are as close as possible to those already found on the beach. However this option adds to the impact on the highway and also is more costly, so is less preferable.

3.4 Summary of preferred recycling and recharge operations

Where possible, the BMP will opt for recycling sediments from within the sediment cell, rather than importing new material. This will very much depend on how the potential recycling source areas accrete, and how much material is available for recycling / needed in any given operation. Where there is not enough material to recycle within the sediment cell, recharge will be utilised. The possible sources will be assessed on an annual basis but all sources may be utilised in order to appropriately maintain critical beach levels in line with the approved BMP (as set out in **Section 4 of the Environmental Statement – proposed scheme**). The ESCP has been, and will continue to carry out a detailed monitoring programme to determine where and how the sediment is moving, as set out in the BMP itself. The monitoring will also assess how the nourished beach is reacting to storms to determine how much sediments are required and when. This information will then inform the decision in any one year where the most appropriate source of shingle will be. One of the key aspects of the beach management activities is to monitor the levels and the profile of the beach at Eastoke to determine how much material is required to be recycled or recharged to maintain the approved standard of flood and erosion protection. It is then possible to determine in any one year which source is the most suitable, sustainable and cost effective.

The following sections provide an overview of the works that will be undertaken in each BMP Unit, as seen in **Figure 1.2**.

3.4.1 BMP Unit 1

This Unit covers the area between the Hayling Island Sailing Club and the Eastoke Point Scheme (**Figure 1.2**). In recent years the sand has accreted at the pontoon to a point where it is no longer functional. If permission is granted, any sand removed from the pontoon must remain in the SAC system, as agreed with Natural England. Intertidal sand will be extracted in the vicinity of the HISC pontoon and deposited at Eastoke, east of the drift divide, where it will move back towards Black Point, continuing to feed the spit. By carrying out works in this way, the size and extent of the SAC feature will not be altered and the sand will only have temporarily moved location. Ideally the Sailing Club would want to return to the 2007 beach profile when the pontoon was accessible at all states of tide. **Figure 3.2** illustrates the Mean High Water Spring Contours between 2003 and 2012 at Black Point Spit. Still, this may be unrealistic due to associated costs, so as a minimum the Sailing Club would like to ensure they have access to the hammer head at all states of the tide. The Sailing Club are also looking at a number of other options or combination of options for managing the access to the water including a possible walkway with a bridge to a hammer head which will be 10 metres north from the current

position. Due to these uncertainties this EIA will only be considering the impact of moving sand in the vicinity of the pontoon to be deposited at Eastoke Point. The quantity of material to be extracted in any one campaign should be mindful of longshore drift rates to Black Point Spit which were approximately 2,000 m³ per year between 2003 and 2013. If this is acceptable in principle, the details of this can be conditioned to be developed within a site specific Construction and Environmental Management Plan (CEMP) at a time when the Sailing Club have made a decision on the way forward.

Extraction from the Ness (using an excavator) will continue dependant on the quality (coarseness) of the material and whether a haul route needs to be constructed over the Eastoke Point rock revetment for the plant to access the Ness.

Clearance of sediment using a launching tractor from the RNLI slipway when it is blocked will also continue.

3.4.2 BMP U2 – Eastoke Point Scheme

The Eastoke Point Scheme was built in 2013 (**Figure 3.3**). The section of beach covered by the Eastoke Point Scheme contained 9 timber groynes that were vulnerable to rapid failures due to the low and dynamic beach levels in this area. Therefore, 5 of the timber structures were removed and replaced with 3 rock groynes and 1 shortened rock groyne. The Eastoke Point scheme was designed with a beach acting as the primary defence to minimise overtopping. The scheme was completed in November 2013 to bring the standard of protection up to the required 1 in 200 year level for 100 years. This frontage will be managed within the holistic approach of the wider South Hayling frontage.

Beach Management will continue as it has on a planned and reactive basis. It is anticipated over the next 5 years that material will not be required to be placed directly into these groyne bays, provided material is placed east of the drift divide at Eastoke, thereby feeding Eastoke Point. The beach levels in this area will continue to be monitored and if necessary, will be directly nourished to bring the beach back up to the required Standard of Protection. Any impacts resulting from continued beach management have already been identified and mitigated for as part of the Eastoke Capital Scheme.

This area will only be nourished by land-based recycling sources or from import via road as the foreshore is too shallow for a barge to pump material ashore (some material pumped onto the drift divide at Creek Road Car Park will however naturally move round into these bays). A haul route would be required along the top of the revetment to allow access.

3.4.3 BMP Unit 3

This Unit is comprised of the main nourished frontage, stretching between

Groyne 7 and Groyne 35 (see **Figure 3.4**). Along this section, there are two different design profiles to be maintained – the Eastoke Beach and Eastoke Corner Car Park. Material will be deposited here from any of the available sources of material. Material from the land-based recycling sources and the import sources can be deposited using the dump trucks and material brought in from the Chichester Harbour Approach Channel and offshore sources will be deposited by ‘rainbowing’. Material will be re-profiled using a bulldozer.

3.4.4 BMP Unit 4

This Unit contains two sources of land-based recycling sources: the Coastguard Revetment and the Open Beach (**Figure 3.1**). Material is taken from these sites using an excavator and transported back to the nourished frontage using the marked haul routes. There is a small patch of beach in front of the Funland Amusement Park where extraction is not allowed to take place, but it is allowed to be used by plant to transport material.

3.4.5 BMP Unit 5

The West Beach revetment acts as a source of material as during storms, material is thrown over the structure and it is therefore then effectively lost from the system. As Inn-on-the-Beach is directly east of this Unit, plant must track behind the building in order to access the shingle.

The adopted policy is to maintain the structure where reasonably practical, and remove sections of the structure when they become a health and safety risk. A 75m section at the western end was removed in March 2012 due to a significant structural failure, triggered by falling beach levels exposing the degraded lower section of the structure. The remaining structure and the existing timber groynes will be monitored and removed as their condition deteriorates.

3.4.6 BMP Unit 6

This Unit experiences localised erosion, particularly along the Golf Club driving range. The area will be used as a haul route pending landowner's permission to recycle material to Eastoke from Gunner Point. The haul route will be constructed by a bulldozer prior to extraction of material at Gunner Point.

3.4.7 BMP Unit 7

Material has only been extracted from Gunner Point by HBC for emergency works in 2014. Following approval in principle by the landowners and Natural England, this iteration of the BMP has identified Gunner Point as a new source of material for recycling, pending landowner permission prior to any Beach Management campaign. The proposal is to utilise this large source of sediment with a number of safeguards in place to protect Vegetated Shingle

Communities, Drift line Communities and the future evolution of these communities. Other restrictions are in place to protect SPA birds, including nesting and roosting birds (as summarised in the Habitat Regulations Assessment).

Extraction of material will be limited to the seaward side of the vegetated shingle and at certain times during the year and tidal cycle (see Mitigation Tables at the end of each Chapter for further detail on the mitigation at Gunner Point). Extraction volumes will be agreed with the landowners and Natural England prior to any recycling campaign.

3.4.8 BMP Unit 8

Works in this Unit are limited to targeting localised patches of erosion. There are pockets of erosion around the car park which require nourishment. Cyclic pulses of material move north up this stretch of coastline, which reduce the linear alignment of the beach. This can introduce the risk of undermining the seawall fronting the Havant Borough Council car park. Material from within the sediment cell will be brought in to reduce erosion, which will buy time before the next pulse of sediment comes through, naturally addressing the problem.

The material can be transported along the haul route on the beach round from Gunner Point, but it is more likely that it will be brought in via Ferry Road on road due to the gradient, width and composition of the beach (mostly shells rather than shingle).

If and when the erosion threshold depicted in **Figure 3.5** is met, material will be deposited in front of the redundant structure from within the sediment cell to further prevent erosion. I.e. if the beach profile erodes towards the red line, we will move shingle from areas of accretion within this BMP unit, to the erosion hotspots). There is currently one pocket of erosion to be addressed circled on **Figure 3.5**. If this is acceptable in principle then the details of this can be conditioned to be developed within a site specific Construction and Environmental Management Plan (CEMP).

Figure 3.1 Areas of accretion and erosion and extraction and deposition points

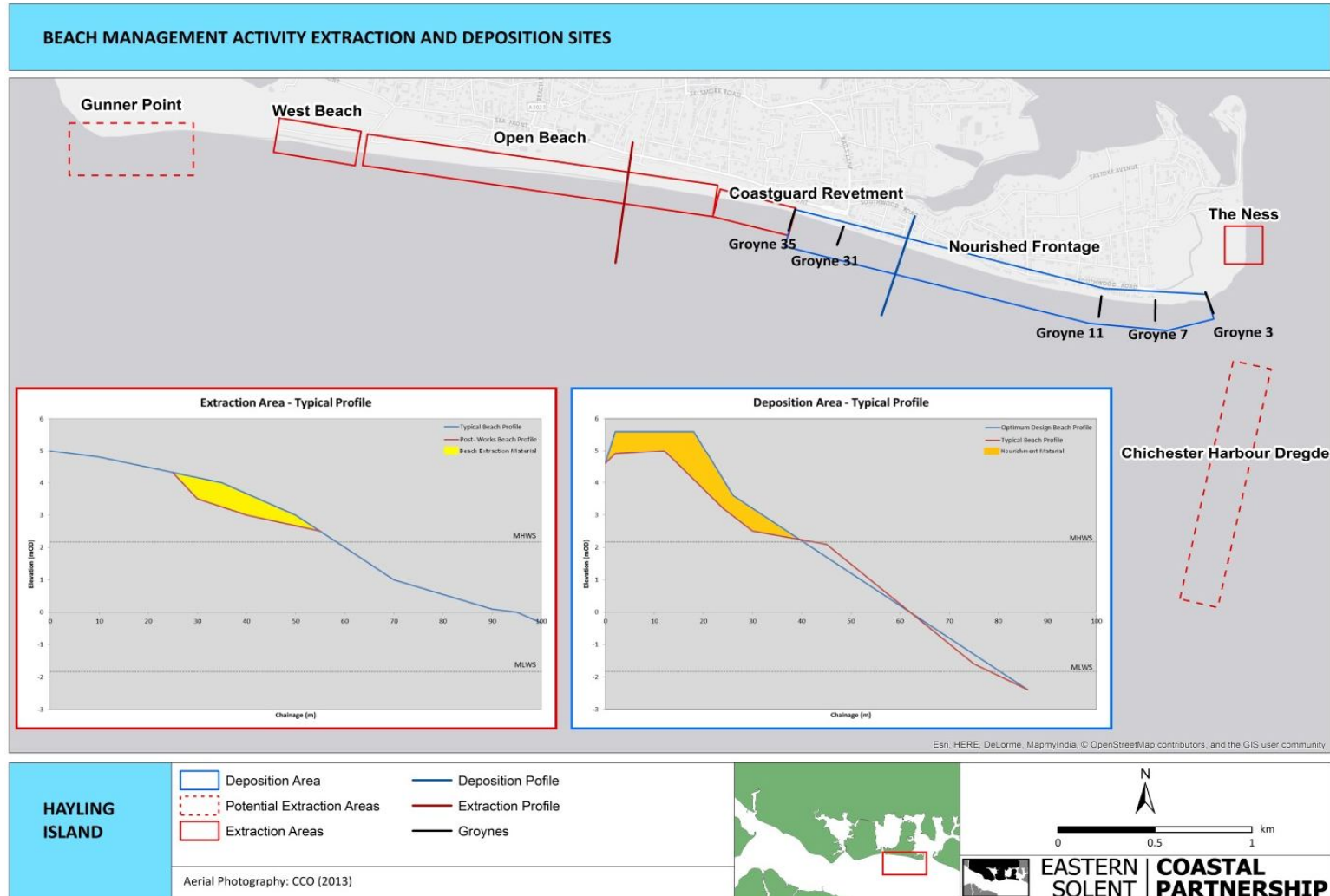


Figure 3.2 Shows the Mean High Water Springs Contours from 2003 – 2012 at Black Point

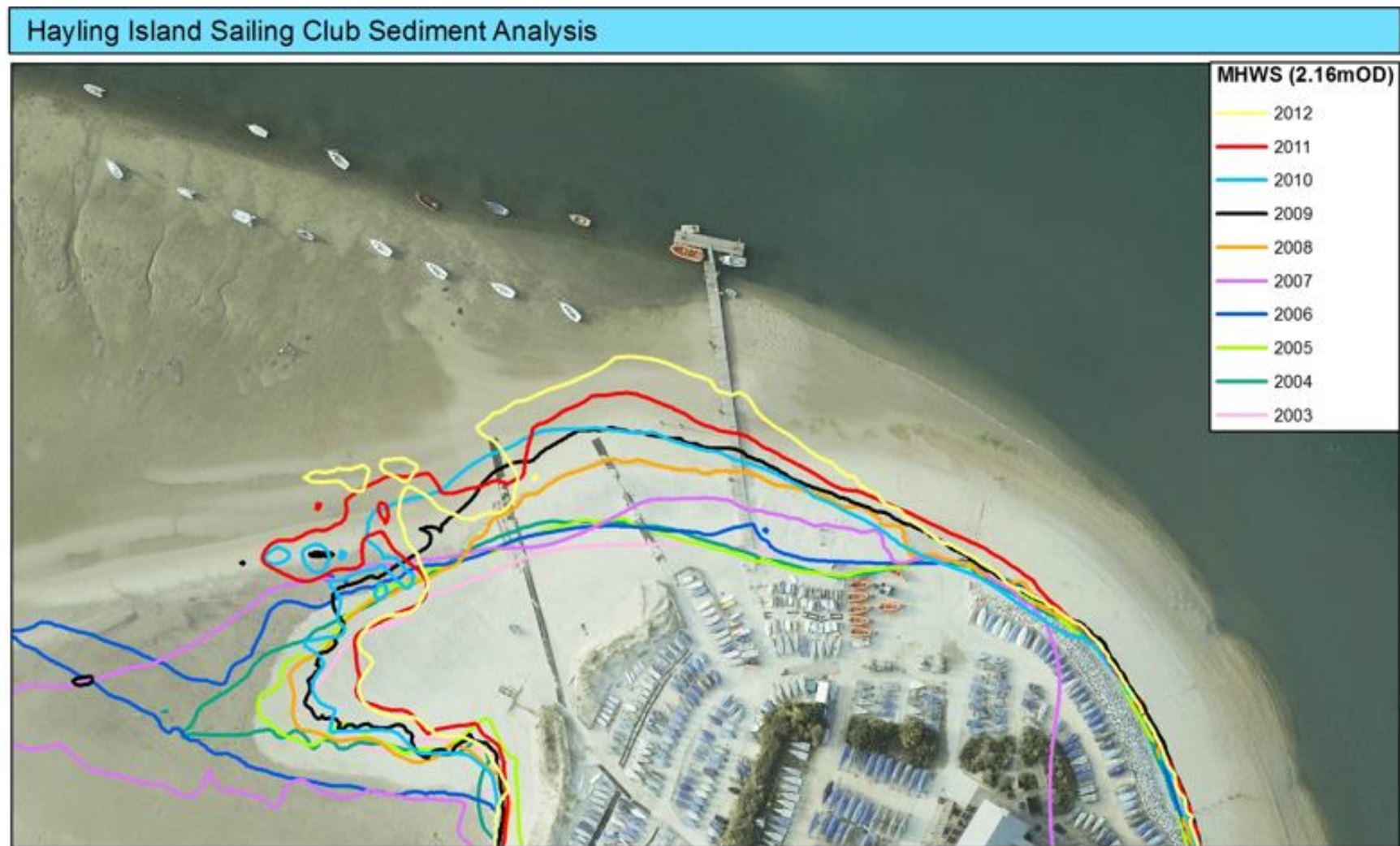


Figure 3.3 Eastoke Point Scheme design

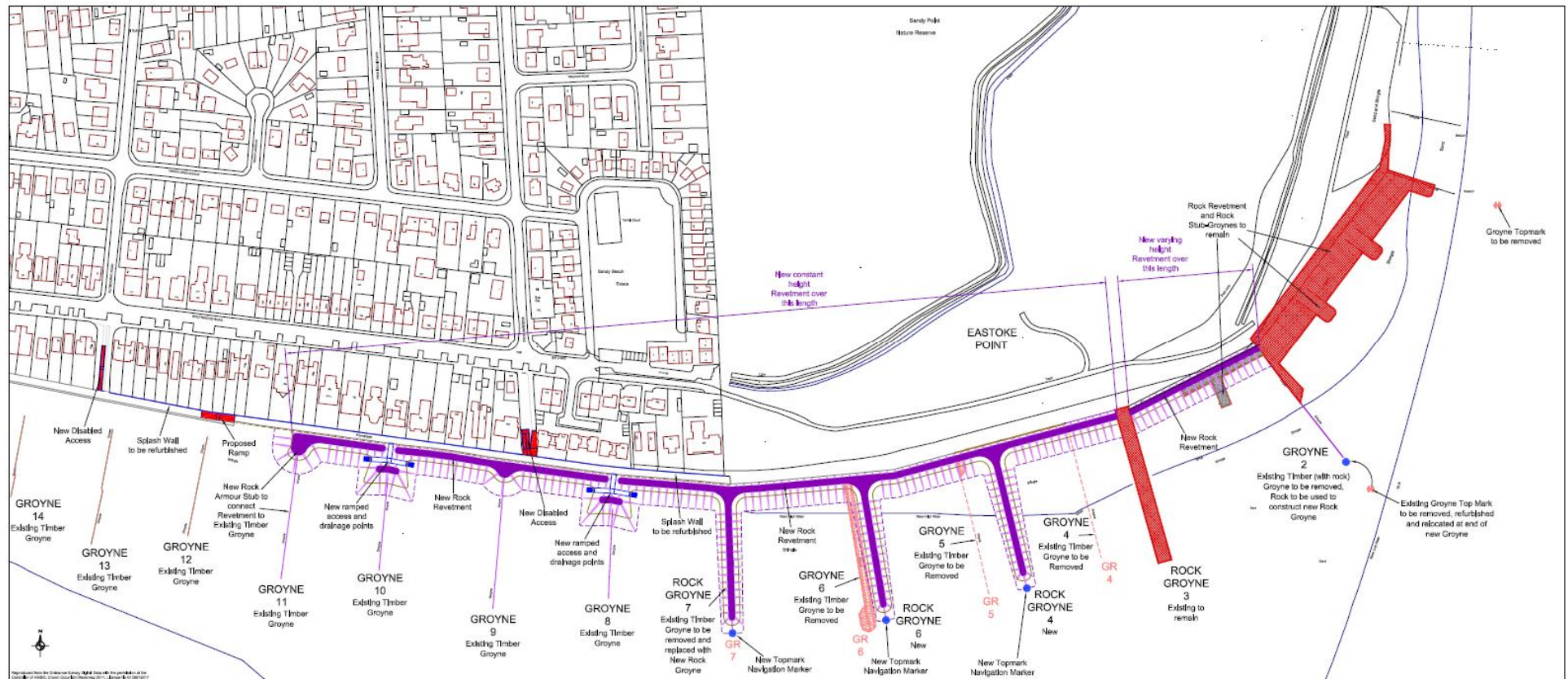


Figure 3.4 The divisions of the beach, based on the design profiles

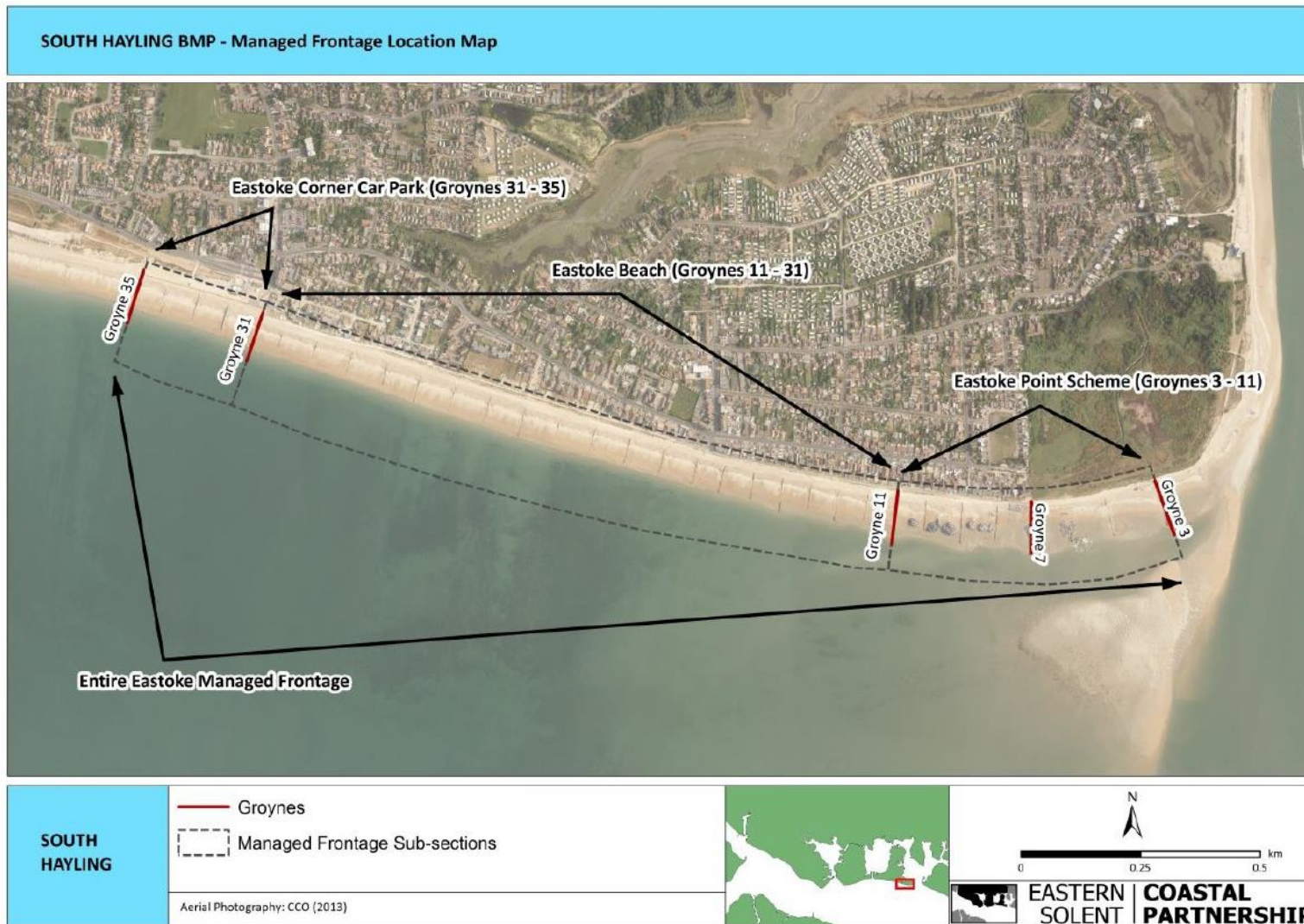


Figure 3.5 Erosion threshold at Ferry Road car park, Hayling Island. The hotspot of erosion currently present is circled in blue



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4. BACKGROUND INFORMATION ON AFFECTED WATER BODIES AND PROTECTED AREAS

4.1 Introduction

The South Hayling Island BMP activities lie within the South East River Basin District (SERBD), the spatial extent of which is illustrated by **Figure 4.1**. This section of the report highlights the water bodies within the SERBD that could be affected by beach management works. **Section 5** (and in particular the scoping exercise) includes more detailed information on these water bodies, before undertaking an assessment of potential impacts on them.

The scheme is also adjacent to, or in the vicinity of various designated Shellfish Waters, Bathing Waters and a suite of Natura 2000 sites, all of which are highlighted within this section (see **Figures 4.2 – 4.x**). Failure of any of these protected areas would result in a failure to comply with the WFD.

4.2 WFD water bodies, shellfish waters, bathing waters and Natura 2000 sites that could be affected by the proposed BMP within the SE RBD

The Solent, Chichester Harbour, Langstone Harbour and East Wight water bodies could all be potentially affected by the BMP works and are therefore the focus of this WFD Assessment. **Figure 4.2** illustrates these water bodies.

Figure 4.3 illustrates the location of Bathing Waters in the vicinity of the BMP frontage. Eastoke, Beachlands West and Beachlands Central bathing waters are all located directly adjacent to the South Hayling Island BMP area. West Wittering and Eastney bathing waters are both located within 2km of the BMP frontage.

Figure 4.4 illustrates the Shellfish Waters in the vicinity of the proposed BMP works. These include Chichester Harbour and Langstone Harbour.

Figure 4.5 illustrates the Natura 2000 sites in the vicinity of the proposed BMP works. These include:

- Solent Maritime Special Area of Conservation (SAC);
- Chichester and Langstone Harbour Special Protection Area (SPA);
- Chichester and Langstone Harbour RAMSAR;
- Solent and Dorset Coast proposed Special Protection Area (pSPA).

4.3 WFD Water bodies scoped out of this assessment

There are a number of water bodies that were not included within or were scoped out of the assessment. These were;

- Groundwater bodies; there are no groundwater bodies in the vicinity of the works and therefore no mechanism for impact
- Surface Water Bodies; there are no surface water bodies in the vicinity of the works therefore there was no mechanism for impact
- Langstone Oyster-beds waterbody have also been ruled out of this assessment due to the distance from the proposed works, just under 5km away. As guidance states that impacts should be considered if within 2km of the works, no impacts are considered to take place.

Figure 4.1: Spatial extent of the South East River Basin District



Figure 4.2: Langstone Harbour, Solent, Isle of Wight East and Chichester Harbour WFD water bodies

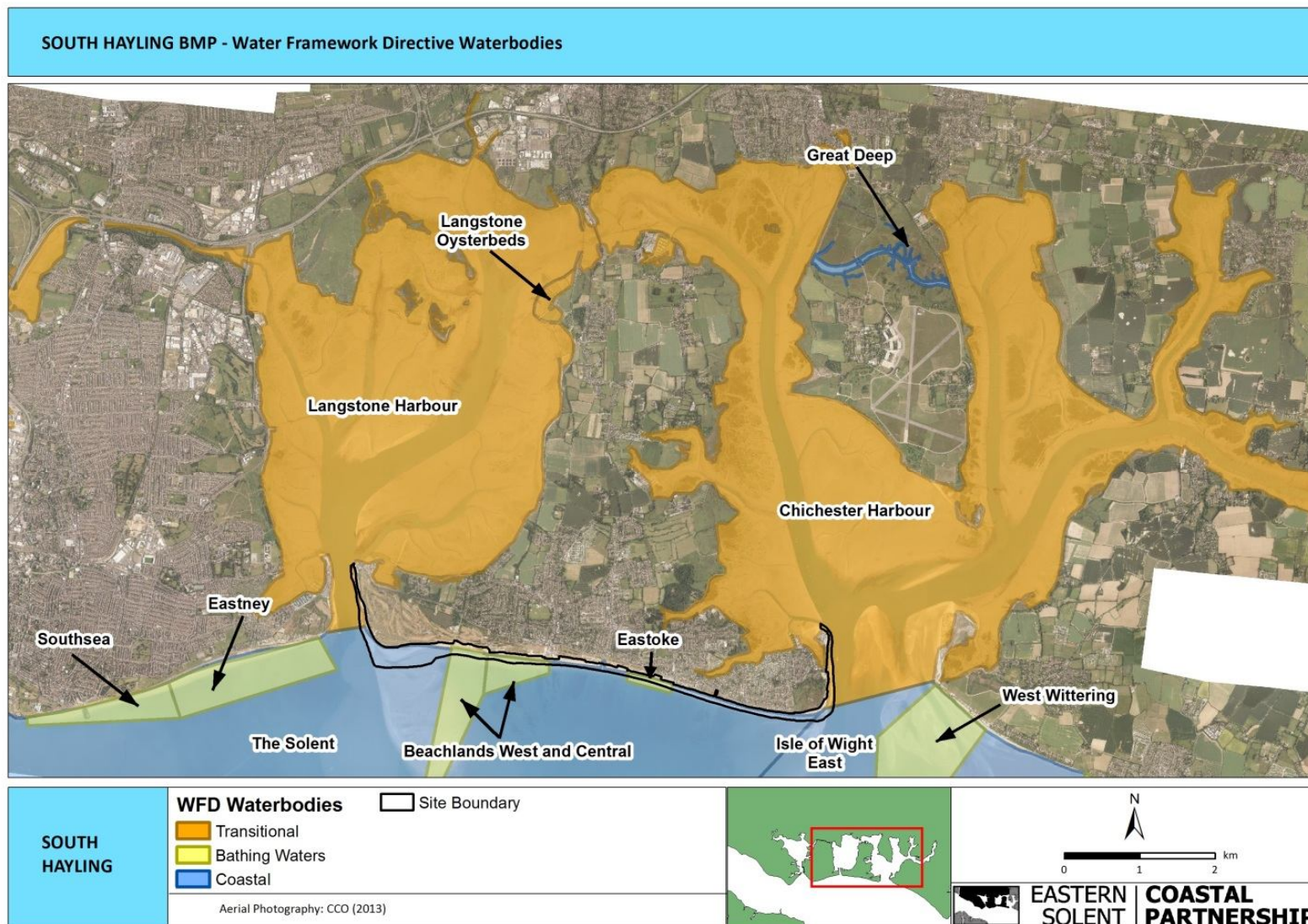


Figure 4.3: Bathing Waters in the vicinity of the BMP frontage



Figure 4.4 Shellfish Waters in the vicinity of the BMP frontage

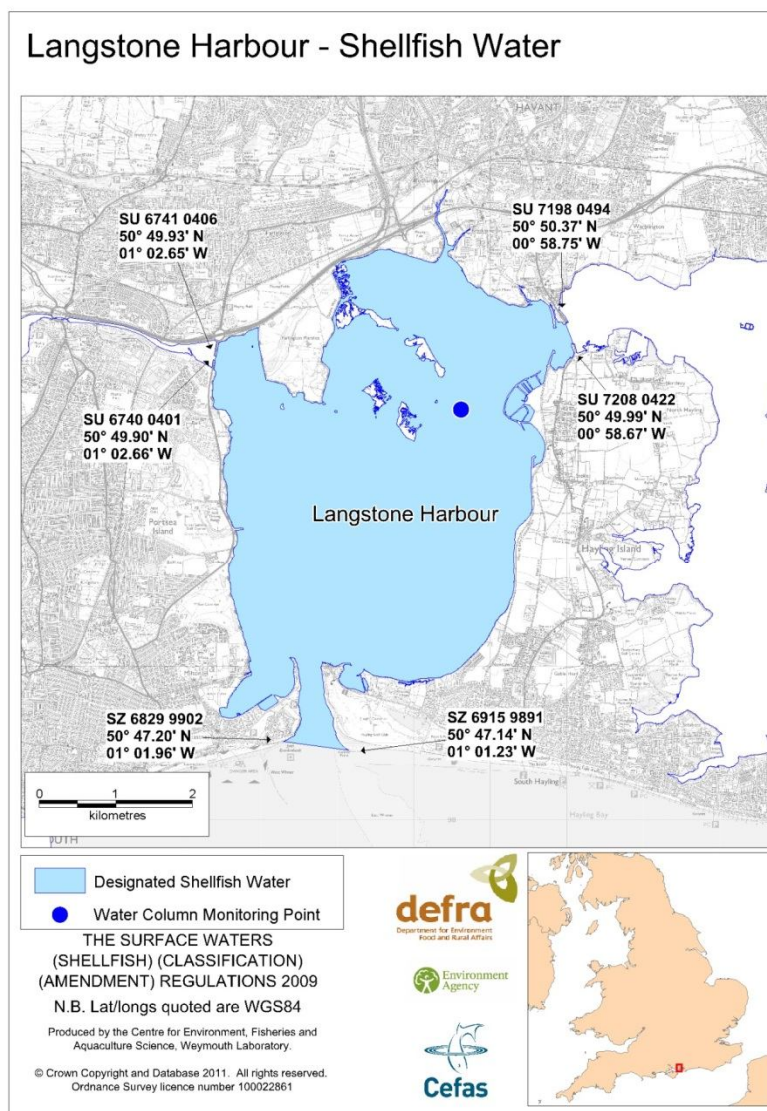
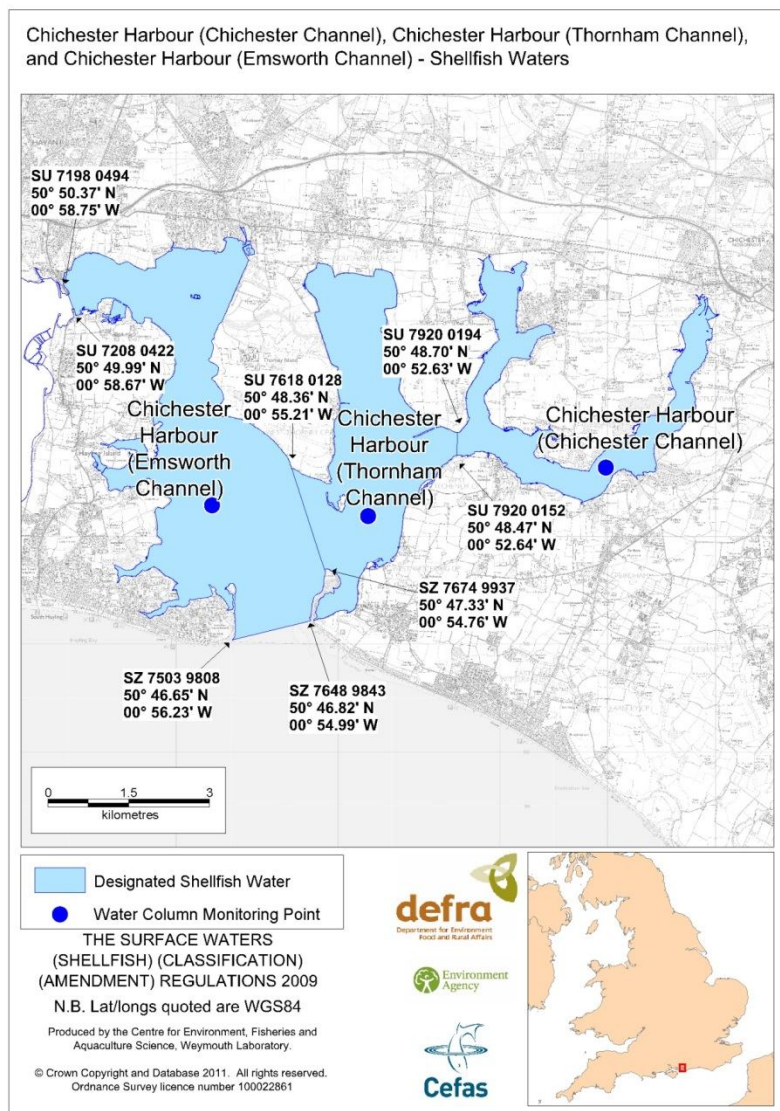
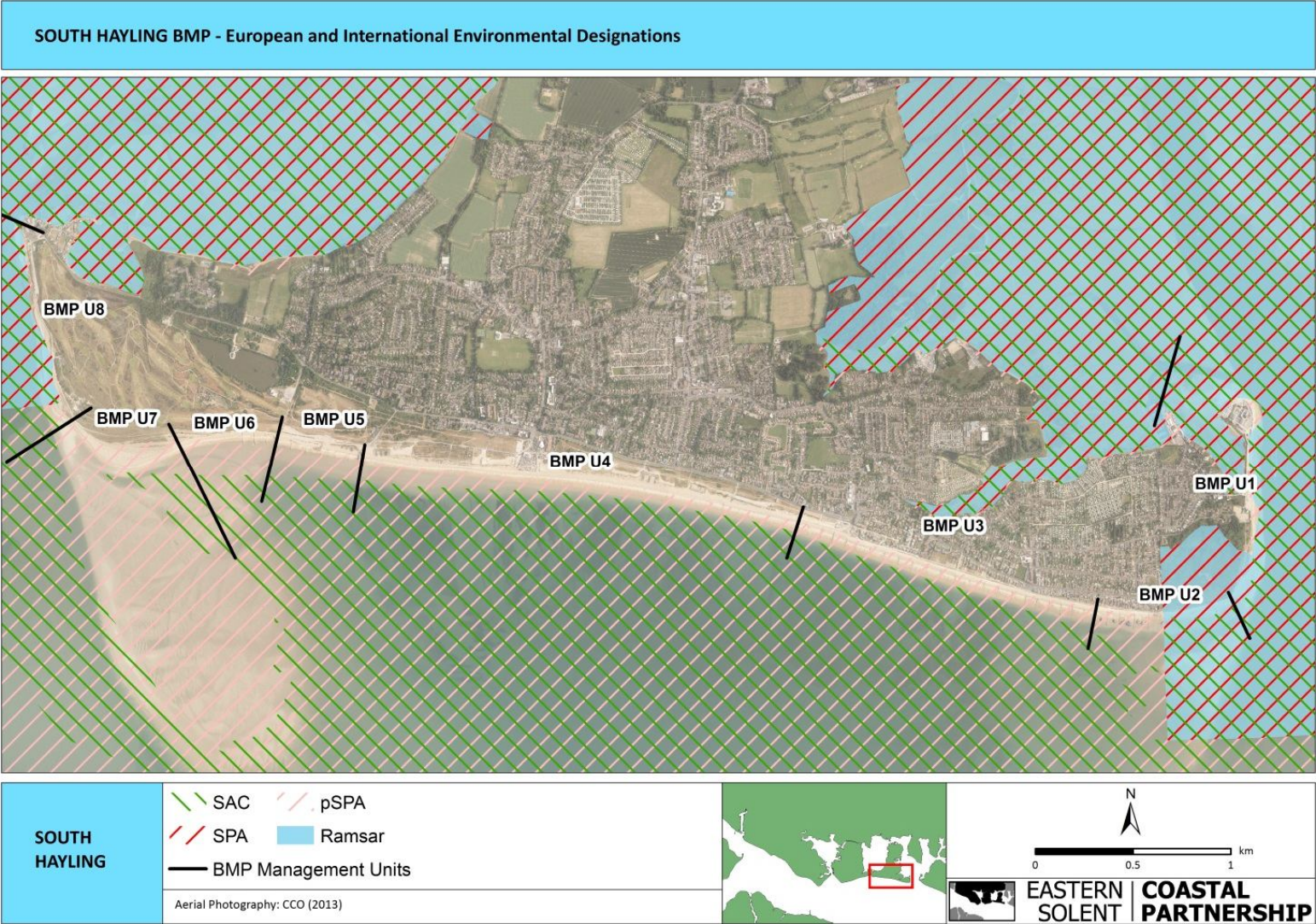


Figure 4.5 International and European protected sites in the vicinity of the BMP frontage



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5. ASSESSMENT OF IMPACTS ON WFD STATUS AND IDENTIFICATION OF APPROPRIATE MITIGATION

5.1 Summary

This section assesses the impacts of the proposed scheme on the ecological and chemical status of the affected WFD water bodies, and identifies mitigation measures where impacts are expected.

In addition, this section will consider the impact of the works on other protected sites, including designated shellfish waters, bathing waters and Natura 2000 sites, as discussed in **Section 4**.

Article 4 of the WFD stipulates that any new modification which has the potential to alter the hydro-morphology or other characteristics of a water body should not cause deterioration in the ecological status or potential of said water body, or prevent it from achieving its objectives as detailed in the RBMP. Where this cannot be achieved, the scheme must meet all the conditions in Article 4 to be legally compliant. The four WFD environmental objectives taken from article 4 of the WFD are:

FD 1	o Changes affecting high Status sites
FD 2	o changes that will cause failure to meet surface water good Ecological status or potential or result in a deterioration of surface water Ecological status or Potential
FD 3	o changes which will permanently prevent or compromise the Environmental Objectives being met in other water bodies
FD 4	o changes that will cause failure to meet good ground water status or result in deterioration in ground water status.

5.2 Summary of impact assessment process

Section 3 has summarised the works and the proposed extension to the works, whilst **Section 4** has summarised the WFD water bodies and wider

protected areas under the WFD that could be impacted by the works.

This Section assesses the impacts that the scheme could have on the biological and chemical elements of the Langstone Harbour, Solent, Isle of Wight East and Chichester Harbour water bodies, all of which are classified as Heavily Modified Water Bodies (HMWBs). This section begins by summarising the higher level WFD assessment made by the North Solent Shoreline Management Plan (SMP), before focussing in detail on the proposed BMP itself. Within this section, impacts have been identified, and mitigation has been considered, to demonstrate how any impacts could be addressed through the approvals and licensing system and during operations.

Following the identification of mitigation measures, the assessment summarises whether any resultant impact from the continuation of the beach management works and the proposed extension could cause a failure to meet the WFD environmental objectives of the water bodies. If they did, the conditions set out in Article 4.7 of the WFD would need to be met in order to justify deterioration and allow the scheme to be approved in compliance with the WFD.

5.3 Summary of the SMP WFD Assessment

The North Solent SMP undertook a high level WFD assessment for each of the adopted coastal management policy options in the North Solent area. **Table 5.1** is extracted from the SMP's assessment of the water bodies that could be impacted by the SMP policy. It summarises the Biological Quality Elements [BQEs] that could be impacted by changes in hydro-morphological or physical parameters of the water bodies resulting from SMP Policy adoption. **Table 5.1** includes a summary for Langstone Harbour, Solent, Isle of Wight East and Chichester Harbour Water Bodies to advise the scheme impact assessment in **Section 5.5**.

Table 5.1 WFD Features and Issues for the North Solent SMP

Feature			Issue	Water body classification and environmental objectives	Opportunity to deliver mitigation measures from the programme of measures &/or recommendations on final policy
Water body	Policy Units	Biological Quality Element	Potential for change in hydromorphological or physical parameter		
Langstone Harbour	5A18, 5A19, 5A20, 5A21, 5API01, 5API02, 5AH101, 5AH106, 5AH107, 5AH108	Macroalgae	Potential changes to macroalgae through: changes in abrasion (associated with velocity); changes in salinity	Ecological Potential Status Current status; Moderate Potential (HMWB) Ecological Status Objective; Good by 2027 <u>Environmental objectives:</u>	<i>Programme of measures from RBMP that could be considered in SMP development or in schemes resulting from SMP policies are indicated below:</i> • Indirect / offsite mitigation (offsetting measures) • Retain marginal aquatic and riparian habitats (channel alteration) • Preserve and where possible enhance ecological value of marginal aquatic habitat, banks and riparian zone • Managed realignment of flood defence • Removal of hard bank reinforcement / revetment, or replacement with soft engineering solution
		Phytoplankton	Potential changes to phytoplankton through: changes in turbidity; changes in thermal depth; changes in water depth; changes in residence time	WFD 2: No changes that will cause failure to meet surface water Good Ecological Status or Potential or result in a deterioration of surface water Ecological Status or Potential WFD 3: No changes which will permanently prevent or compromise the environmental objectives being met in other Water Bodies	

Feature			Issue	Water body classification and environmental objectives	Opportunity to deliver mitigation measures from the programme of measures &/or recommendations on final policy
Water body	Policy Units	Biological Quality Element	Potential for change in hydromorphological or physical parameter		
		Phytoplankton	Potential changes to phytoplankton through: changes in turbidity; changes in thermal depth; changes in water depth; changes in residence time	WFD 3: No changes which will permanently prevent or compromise the environmental objectives being met in other Water Bodies	• Increase in-channel morphological diversity
Solent	5B01, 5B02, 5B03, 5C15, 5C16, 5C18, 5C19, 5C20, 5C22, 5F01, 5API02, 5AH105	Benthic Invertebrates	Potential changes to benthic invertebrates through: connectivity with riparian zone; availability of organic debris; groundwater connectivity; light; beach water table (TraC)	Ecological Potential Status Current status; Moderate Potential (HMWB) Ecological Status Objective; Good by 2027 <u>Environmental objectives:</u>	<i>Programme of measures from RBMP that could be considered in SMP development or in schemes resulting from SMP policies are indicated below:</i> • Indirect / offsite mitigation (offsetting measures) • Preserve and where possible enhance ecological value of marginal aquatic habitat, banks and riparian zone • Managed realignment of flood defence • Removal of hard bank reinforcement / revetment, or replacement with soft
		Phytoplankton	Potential changes to phytoplankton through: changes in turbidity; changes in thermal depth; changes in water depth; changes in residence time	WFD 2: No changes that will cause failure to meet surface water Good Ecological Status or Potential or result in a deterioration of surface water Ecological Status or Potential	

Feature Water body	Policy Units	Biological Quality Element	Issue Potential for change in hydromorphological or physical parameter	Water body classification and environmental objectives	Opportunity to deliver mitigation measures from the programme of measures &/or recommendations on final policy
				WFD 3: No changes which will permanently prevent or compromise the environmental objectives being met in other Water Bodies	engineering solution

Feature Water body	Policy Units	Biological Quality Element	Issue Potential for change in hydromorphological or physical parameter	Water body classification and environmental objectives	Opportunity to deliver mitigation measures from the programme of measures &/or recommendations on final policy
<i>Coastal</i>					
Chichester Harbour	5A04, 5A05, 5A07, 5A08, 5A09, 5A10, 5A11, 5A12, 5A13, 5A14, 5A15, 5A16, 5A17, 5A18, 5AHI01, 5AHI02, 5AHI03, 5AHI04, 5AHI05	Phytoplankton	Potential changes to phytoplankton through: changes in turbidity; changes in thermal depth; changes in water depth; changes in residence time	<u>Ecological Potential Status</u> Current status; Moderate potential (HMWB) Ecological Status Objective; Good by 2027 <u>Environmental objectives:</u> WFD 2: No changes that will cause failure to meet surface water Good Ecological Status or Potential or result in a deterioration of surface water Ecological Status or Potential WFD 3: No changes which will permanently prevent or compromise the	Programme of measures from RBMP that could be considered in SMP development or in schemes resulting from SMP policies are indicated below: • Indirect / offsite mitigation (offsetting measures) • Retain marginal aquatic and riparian habitats (channel alteration) • Preserve and where possible enhance ecological value of marginal aquatic habitat, banks and riparian zone • Managed realignment of flood defence • Removal of hard bank reinforcement / revetment, or replacement with soft

Feature Water body	Policy Units	Biological Quality Element	Issue Potential for change in hydromorphological or physical parameter	Water body classification and environmental objectives	Opportunity to deliver mitigation measures from the programme of measures &/or recommendations on final policy
Isle of Wight East	5A01, 5A02, 5A03, 5A04, 5AHI05	Benthic Invertebrates	Potential changes to benthic invertebrates through: connectivity with riparian zone; availability of organic debris; groundwater connectivity; light; beach water table (TraC)	<u>Ecological Potential Status</u> Current status; Good potential (HMWB) Ecological Status Objective; Good by 2015 <u>Environmental objectives:</u> WFD 2: No changes that will cause failure to meet surface water Good Ecological Status or Potential or result in a deterioration of surface water Ecological Status or Potential WFD 3: No changes which will permanently prevent or compromise the environmental objectives being met in other Water Bodies	Programme of measures from RBMP that could be considered in SMP development or in schemes resulting from SMP policies are indicated below: All recommended mitigation measures in place
		Macroalgae	Potential changes to macroalgae through: changes in abrasion (associated with velocity); changes in salinity		
		Phytoplankton	Potential changes to phytoplankton through: changes in turbidity; changes in thermal depth; changes in water depth; changes in residence time		

Table 5.2 summarises at this higher SMP level, the impacts that delivery of HTL policy along the South Coast of Hayling Island (SMP Policy Unit 5a HI05) could have on the water bodies affected. As can be seen, at the SMP assessment level, WFD Objectives 1 and 4 were identified as not being applicable, as Langstone Harbour, Solent, Isle of Wight East, Chichester Harbour Water bodies are not high status sites, nor is beach management policy expected to interfere with any groundwater bodies. WFD Objective 2 and 3 will be met by this policy, as any scheme would not cause changes which will permanently prevent or compromise the environmental objectives being met in other water bodies.

Table 5.2: WFD Assessment of North Solent SMP Policy

Policy Unit		SMP Policy			Assessment of impact (including list of Water Bodies affected)	Environmental Objectives met?			
		2025	2055	2075		WFD 1	WFD 2	WFD 3	WFD 4
SAHI 05	Chichester Harbour entrance (west) to Langstone Harbour entrance (east)	HTL	HTL	HTL	Maintaining the defence line through upgrades, maintenance or beach management activities would provide economic and societal benefits to significant numbers of residential properties, commercial assets and transport networks, as well as amenity open space and facilities, including a golf course. Beach recycling from areas of sediment accretion at Sinah to Eastoke and coastal monitoring will be key to the successful management of this frontage, and will allow the shoreline	n/a	✓	✓	n/a

Policy Unit 5aHI05 has not been identified to have any adverse impacts on the status of the relevant waterbodies; instead it has been identified as either being neutral or contributing towards the WFD objectives.

5.4: Water Framework Directive Assessment

This section presents further details on the water bodies that could be impacted by the BMP, and highlights any potential impacts on key receptors. This information feeds the impact assessment in **Section 5.5**.

Screening

Given that the proposed South Hayling Island BMP works are directly adjacent to a number of WFD water bodies (as set out in **Section 4**), and the works include the management of beach materials in the intertidal zone, we have completed a scoping exercise to determine whether our works could impact these water bodies.

Scoping Exercise

The following section details the scoping stage of the Water Framework Directive Assessment, in line with the new Environment Agency guidance 'clearing the waters'. It begins by detailing the proposed activity, and then summarises potential impacts on each adjacent water body (as highlighted in **Section 4**). The potential risks from the beach management activities to each of the following receptors are set out, for each waterbody:

- hydro-morphology,
- biology – habitats,
- biology – fish,
- water quality,
- protected areas,
- invasive non native species.

Where potential impacts have been identified on any of the receptors, in any waterbody, the activity has been considered in more detail in **Section 5.5**.

5.4.1 Summary of Activities:

Activity	Description, notes or more information		
Applicant name	Eastern Solent Coastal Partnership [ESCP] on behalf of Havant Borough Council		
Application reference number (where applicable)	N/A – applying for both a Planning Permission and Marine Licence		
Name of activity	South Hayling Island Beach Management Plan (2017-22) and beyond (on-going in one form or other since 1985).		
Brief description of activity	Beach Recycling, Beneficial use of dredged material (classified as recycling as it is from the same sediment cell) and Beach Recharge (importing material from outside the sediment cell). This is to maintain beaches to provide a 1 in 200 year standard of flood protection (as detailed in Section 3 of this WFD Assessment).		
Location of activity (central point XY coordinates or national grid reference)	SZ 74439 98016 Lat: 50.776950 Long: -0.94559669 See Figure 1.2 of this WFD Assessment, which illustrates the full BMP frontage, including frontage descriptions.		
Footprint of activity (ha) and Km			
	Water Body	Area of the works within the Water body (Hectares)	Area of the works within the Water body KM2
	Solent	35.93	0.3593
	Chi	1.62	0.0162

	Lang	1.44	0.0144	
	East Wight	0.37	0.0037	
Timings of activity (including start and finish dates)	The beach management activities are ongoing activities. The proposed BMP is dated from 2017-22, but permissions will be ongoing. Work generally takes place in March and / or September each year (duration of works from 2 to 4 weeks), or at other times in an emergency. This is to return the beach at Eastoke to design volumes / profile following winter storms, or to ready them in advance of the winter storms. Very specific timing constraints have been promoted in the Habitat Regulations Assessment (Appendix C of the Environmental Statement) due to sensitive environmental receptors – works will be carried out in line with these requirements.			
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	See Section 3 of this WFD assessment for a detailed description of the proposed BMP. These estimates and (the actual amounts) will be dependant on the monitoring of the beach to determine how much material is required in any one year to maintain the design profile of the beach. Approximately 207,000m3 of material will be required to maintain the beach at Eastoke to a 1 in 200 year, Standard of Protection [SoP], over the next 5 years. Monitoring data will confirm how much material is available from the possible sources prior to any campaign. Based on this information, the coastal manager will estimate the quantities to be extracted from within the sediment cell. Where there is a shortfall within the sediment cell, recharge will be utilised.			
Use or release of chemicals (state which ones)	None			

5.4.2 Solent Water Body

5.4.2.1 Details of water bodies adjacent to the South Hayling Island coastline that could be impacted by BMP activities:

Water body	Description, notes or more information
WFD water body name	<i>Solent</i>
Water body ID	GB650705150000
River basin district name	<i>South East River Basin District</i>
Water body type (estuarine or coastal)	<i>Coastal</i>
Water body total area (ha)	25958.087 Area (ha)
Overall water body status (2015)	<i>Moderate</i>
Ecological status	<i>Moderate</i>
Chemical status	<i>Fail</i>
Target water body status and deadline	<i>Moderate by 2015</i>
Hydro-morphology status of water body	<i>Not assessed by 2015</i>
Heavily modified water body and for what use	<i>Sector under investigation it also states Reason for Coastal Protection and Navigation, Ports and Harbours.</i>
Higher sensitivity habitats present	<i>None in the vicinity of the works</i>
Lower sensitivity habitats present	<i>The upper beach seaward of the current and proposed defence is a shingle beach</i> <i>The lower beach intertidal sand</i>

Phytoplankton status	<i>Good</i>
History of harmful algae	<i>No</i>
WFD protected areas within 2km	• <i>Bathing Water Directive</i> • <i>Conservation of Wild Birds Directive</i> • <i>Habitats Directive</i> • <i>Nitrates Directive</i> • <i>Shellfish Directive</i> • <i>Urban Waste Water Treatment Directive</i>

5.4.2.2 Solent Water Body: Specific risk information

Section 1: Solent Water Body Hydro-morphology

Consider if your activity:	Yes	No	Hydro-morphology risk issue(s)
Could impact on the hydro-morphology (for example morphology or tidal patterns) of a water body at high status		<u>Impact assessment not required</u>	No – There has been monitoring since 1985 and the beach is a very dynamic environment. One of the aims of the scheme is to work with the natural hydro-morphology, which is why beach management has been selected as the preferred option instead of a hard defence. <i>The Solent waterbody does not have a high status regarding hydro-morphology</i> <i>Therefore, no further assessment required.</i>

Could significantly impact the hydro-morphology of any water body		<u>Impact assessment not required</u>	No, the Solent Water body has been assessed above and it has been concluded that it will not impact hydro-morphology. The process of beach management maintains the natural hydro-morphology.
Is in a water body that is heavily modified for the same use as your activity		<u>Impact assessment not required</u>	<i>The Solent is heavily modified for Coastal Protection and or Flood Defence.</i> <i>Although this scheme functions as both a flood defence and also a coastal protection scheme, it is working with the natural environment rather than building a hard defence (as set out in the Eastoke Sectoral Strategy, and the North Solent Shoreline Management Plan). It is not believed that this softer form of flood and coastal erosion risk management, working with natural coastal processes is contributing to the reason that the Solent water body is designated as heavily modified.</i>

Conclusions for hydro morphology: It can be concluded that these works will not have a negative impact the morphology in the immediate vicinity of the works or further afield. The works can be seen to have a positive effect by allowing the area to contribute to the Mitigation Measures identified the Solent Water Body by contributing to retaining sediment within the system through the recycling activities which contributes to Mitigation Measure 26; Sediment Management.

Section 2: Solent Water Body Biology - Habitats:

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger	Yes, to one or more – requires impact assessment		No, total area / foot print of the works / activity within the Solent waterbody is 0.3593Km ²
1% or more of the water body's area			No, 1% of water body area = 1.14km ² Total area of works = 0.3593KM
Within 500m of any higher sensitivity habitat			No. There are two areas of the BMP (Unit 1 and 8), at the extremities of the site that do have saltmarsh within 500m of the works, however it is not geographically connected to the habitat and therefore there is no pathway to impact sensitive sites.

1% or more of any lower sensitivity habitat			Yes Area of work is 0.359 Km² and the area of intertidal cobbles is 1.29Km² =27% of total habitat affected by the whole beach management activities within the Solent Water body (this will not occur in any one year) See HRA in Section 9 of the Environmental Statement.
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Section 2: Solent Water Body Biology - Fish:

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		Go to next section	No - The Solent is not classified as an estuary, but rather a coastal water. The only area affected by the works is very close to the shore and the movement of migratory fish into, Southampton water, River Meon and Portsmouth Harbour will not be impacted by these works.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)		Impact assessment not required	No - as above. Fish and shellfish are considered in detail in the BMP's Environmental Statement (Section 10) . There could be a negligible impact from increased suspended sediments in the water body. The operation has been designed to prevent this. We are not expecting any impacts on fish and shellfish.
Could cause entrainment or impingement of fish		Impact assessment not	No – as above

		required	
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Section 3: Solent Water Body - Water Quality:

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)		<u>Impact assessment not required</u>	Any Impacts are considered to be less than levels experienced during a storm. For example, with suspended solids - this beach is very exposed and therefore, the wave exposure is large. Any localised increases would dissipate quickly. Any impacts from the Beach Management Activities including rainbowing are considered to settle within a short space of time (Less than 1 tidal cycle (24hours). The recycling moves sediment within the open coastal environment, which is low in fines, so will settle out very quickly. Recharge by road also considered to be low risk as sediment is already sorted so level of fines is very low. Rainbowing is considered to have the highest risk of impacting water clarity. Rainbowing can only take place approximately 1-2 hours either side of high tide, to allow the dredger to have the depth to get close enough to the shore. Therefore any potential impacts are very short lived. The total length of time to import material from the

			Chichester Harbour entrance beneficial reuse is dependent on the amount of material needed and also the amount of suitable material available per dredging campaign. For example in 2015, the operation took approximately 4 days and in 2016 it took approximately 10 days (only working over the high tide) Therefore any potential impacts would not be continuous. The material being rainbowed onto the beach is chosen specifically to be large (20 - 64mm), therefore there will be a limited level of fines in the material rainbowed onto the beach. There have not been any reported problems in the past of impacts that have affected water quality since the works have taken place since 1985. Recharge can also be applied via this technique for offshore marine licensed sites, but again we would specify low fines.
Is in a water body with a phytoplankton status of moderate, poor or bad		Impact assessment not required	No the area is not moderate, poor or bad in status for phytoplankton
Is in a water body with a history of harmful algae		Impact assessment not required	No

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	The Solent Water body has an issue with TBTs and Mercury and it's compounds. However the sediment that is recycled within the Beach Management activities is from within the beach itself which is very coarse material and therefore contaminants will not be able to bind the shingle. The material used from the Chichester Harbour Approach channel also originates from the beach and therefore is also very coarse. Chichester Harbour does not have any issues with TBTs and Mercury and its compounds.
It disturbs sediment with contaminants above Cefas Action Level 1		Impact assessment not required	As above.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	No – no chemical released.

Section 4: Solent Water Body: WFD protected areas

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment		Yes, the site is either within or adjacent to the following protected sites: • The Solent Maritime SAC - See HRA Section 9 of the Environmental Statement for detail (conclusion included in WFD Assessment – Section 4.8). • Chichester and Langstone SPA - See HRA Section 9 of the Environmental Statement for detail (conclusion included in WFD Assessment – Section 4.8). • Shellfish Waters - see WFD Assessment (Section 4.6). • Bathing Waters - see WFD Assessment (Section 4.7). • Nutrient sensitive areas - see WFD Assessment (Section 4.9).

Section 5: Solent Water Body Invasive non-native species (INNS)

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS		Impact assessment not required	No, as a significant material is sourced from within the same sediment cell, which does not have INNS. Material sourced from off shore will come from licenced aggregate sites so impacts of INNS have already been assessed within the aggregates licence application.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydro-morphology	No	Beneficial – Beach management working with the hydro-morphology, alternative would be a hard defence.
Biology: habitats	Yes	Only low sensitivity habitats in the vicinity of the works. The most sensitive Habitat is the Vegetated Shingle and drift line vegetation which occurs above the mean high water mark. It will however be protected as set out in the monitoring and mitigation plan (See Table 5.1 of the Habitat Regulations Assessment – Section 9 of the Environmental Statement). These habitats have been assessed within the HRA (referred to above). Beach Management works are working to retain sensitive habitats, and not lose it.
Biology: fish	No	There will not be an impact on Fish.

Water quality	No	Any impacts from the Beach Management Activities (including rainbowing) are considered to settle within a short space of time (Less than 1 tidal cycle (24hours)). The maximum duration of any of the works is 4 weeks. Rainbowing is intermittent as it can only take place two hours either side of high tide.
Protected areas	Potential risk to Bathing Waters. Potential risks to Natura 2000 Sites see Habitat Regulations Assessment (Section 9 of the ES). Avoided through appropriate mitigation.	There is a very low potential risk to these receptors, however these are not new works and have been ongoing in one form or other since 1985. There have not been any failures or recorded impacts from the works to date, so the risk is very low that they would materialise now. Bathing Waters – Water quality at designated bathing water sites in England is assessed by the Environment Agency. From May to September, weekly assessments measure current water quality, and at a number of sites daily pollution risk forecasts are issued. There has been no failure of bathing waters from the available information. Works are likely to take place in March which is outside the bathing waters season or September which is within the bathing water season, however the material being either recycled or recharged onto the beach is a coarse material and therefore the level of fines will be low. As contaminants bind to small particulate matter, the risk of pollution is very low. The risk of bacterial concentrations of intestinal <i>enterococci</i> and <i>escherichia coli</i>, are extremely low as the sediment is either sourced from the beach (which is clean), or sources that are considered to be clean. Shellfish Waters – Not present in this location (Solent Water Body)
Invasive non-native species	No	No, as a significant amount of material is sourced from within the sediment cell, which does not have INNS. If Shingle is being re-nourished from outside of the sediment cell there is an increased risk of Non – native invasive species, however this material is only

		brought in from licenced marine dredged areas, and this would have been considered through the application for the licenced extraction point. Given that the sediment is marine sourced, it is not considered that there is any potential for INNS.
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5.4.3 Chichester Harbour Water Body:

5.4.3.1 Details of water bodies adjacent to the South Hayling Island coastline that could be impacted by BMP activities:

Water body	Description, notes or more information
WFD water body name	<i>Chichester Harbour</i>
Water body ID	GB580705210000
River basin district name	<i>South East River Basin District</i>
Water body type (estuarine or coastal)	<i>Estuarine</i>
Water body total area (ha)	3012.66406207Area (ha)
Overall water body status (2015)	<i>Moderate</i>
Ecological status	<i>Moderate</i>
Chemical status	<i>Good</i>
Target water body status and deadline	<i>Good by 2027</i>
Hydro-morphology status of water body	<i>Supports Good</i>
Heavily modified water body and for what use	<i>Sector under investigation it also states Reason for Coastal Protection and Navigation, Ports and Harbours.</i>

Higher sensitivity habitats present	<i>None in the vicinity of the works</i> <i>Within Chichester harbour</i> <i>111.01Ha Intertidal Seagrass – Located within the central harbour</i> <i>0.41 Ha Subtidal Seagrass – Located within the central harbour</i> <i>332.75 Ha Saltmarsh – Located further within the harbour where sediment are finer – mud and lower levels of exposure to wave energy.</i>
Lower sensitivity habitats present	<i>The upper beach seaward of the current and proposed defence is a shingle beach</i> <i>The lower beach intertidal sand</i> <i>1612.24ha Intertidal soft sediment</i> <i>1.66ha Rocky shore</i> <i>0.01ha Subtidal rocky reef</i> <i>961.25ha Subtidal soft sediments</i>
Phytoplankton status	<i>High</i>
History of harmful algae	<i>No</i>
WFD protected areas within 2km	• <i>Conservation of Wild Birds Directive</i> • <i>Habitats Directive</i> • <i>Nitrates Directive</i> • <i>Shellfish Directive</i> • <i>Urban Waste Water Treatment Directive</i>

5.4.3.2 Chichester Harbour Water Body: Specific risk information

Section 1: Chichester Harbour Water Body: Hydro-morphology

Consider if your activity:	Yes	No	Hydro-morphology risk issue(s)
Could impact on the hydro-morphology (for example morphology or tidal patterns) of a water body at high status		<u>Impact assessment not required</u>	<i>No – There has been monitoring since 1985 and the beach is a very dynamic environment. One of the aims of the scheme is to work with the natural hydro-morphology, that is why beach management has been selected as the preferred option instead of a hard defence.</i> <i>The Chichester Harbour waterbody supports good hydro-morphology</i> <i>Therefore, no further assessment required.</i>
Could significantly impact the hydro-morphology of any water body		<u>Impact assessment not required</u>	No, the Chichester Harbour Water body has been assessed above and it has been concluded that it will not impact hydro-morphology. The process of beach management maintains the natural hydro-morphology.
Is in a water body that is heavily modified for the same use as your activity		<u>Impact assessment not required</u>	<i>Chichester Harbour is heavily modified for navigation, ports and harbours.</i>

The conclusions for hydro-morphology: It can be concluded that these works will not have a negative impact the morphology in the immediate vicinity of the works or further afield. The works can be seen to have a positive effect by retaining sediment within the system through the recycling activities

Section 2: Chichester Harbour Waterbody: Biology - Habitats

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger		No to all – impact assessment not required	No, total area / foot print of the works / activity within the Chichester Harbour waterbody is 0.0162km ²
1% or more of the water body's area			No, 1% of water body area = 2.59km ² Total area of works = 0.0162KM ² which equates to 0.05%
Within 500m of any higher sensitivity habitat			No. The area of BMP Unit 1 at the extremity of the site does have saltmarsh within 500m of the works, however it is geographically isolated from the habitat and therefore there is no pathway to impact sensitive

			<i>sites.</i>
1% or more of any lower sensitivity habitat			<i>No low sensitivity habits present in this location.</i>

Section 2: Chichester Harbour Water Body Biology – Fish:

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		Go to next section	No. Potential impacts will be above the tide line in the mouth of the Estuary. There will be no piling as part of the works, and a very low level of noise caused by the machinery on the beach. Chichester Harbour is not a migratory fish route.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)		Impact assessment not required	No (as above)
Could cause entrainment or impingement of fish		Impact assessment not required	No.

Section 3: Chichester Harbour Water Body:

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)		<u>Impact assessment not required</u>	Any Impacts are considered to be less than levels experienced during a storm. For example, with suspended solids, the beach is very exposed and therefore, the wave exposure is large. Rainbowing takes place outside Chichester Harbour Waterbody, which is therefore at a lower risk than the Solent Water body, which concluded that any impacts from rainbowing are considered to settle within a short space of time (Less than 1 tidal cycle (24hours)). Rainbowing can only take place approximately 1-2 hour either side of high tide, to allow the dredger to have the depth to get close enough to the shore. Therefore any potential impacts are very short lived. The total length of time to import the material from the Chichester Harbour entrance beneficial reuse is dependant on the amount of material needed and also the amount of suitable material available per dredging campaign. For example in 2015, the operation took approximately 4 days and in 2016 it took approximately 10 days (only working over the high tide period). Any potential impacts would not be continuous. The material being rainbowed onto the beach is chosen specifically to be fairly large; therefore there will be a limited level of fines in the material rainbowed onto the beach.

			There have not been any reported problems in the past of impacts that have affected water quality since the works have taken place since 1985.
Is in a water body with a phytoplankton status of moderate, poor or bad		Impact assessment not required	No, the area is not moderate, poor or bad in status for phytoplankton
Is in a water body with a history of harmful algae		Impact assessment not required	No

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	The Chichester Harbour Water body does not have an issue with chemicals on the EQSD Chichester Harbour does not have any issues with TBTs and Mercury and its compounds.
It disturbs sediment with contaminants above Cefas Action Level 1		Impact assessment not required	As above.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	No, there will be no discharges as part of these works

Section 4: Chichester Harbour Water Body: WFD protected areas

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area	Requires impact assessment		Yes Works are in or adjacent to the following protected areas • The Solent Maritime SAC - See HRA Section 9 of the Environmental Statement for details (conclusion included in WFD Assessment, Section 4.8) • Chichester and Langstone SPA - See HRA section 9 of the Environmental Statement for details (conclusion included in WFD Assessment, Section 4.8) • Shellfish Waters - see WFD Assessment (See Section 4.6) • Nutrient sensitive areas - see WFD Assessment (See Section 4.9)

Section 5: Invasive non-native species (INNS)

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS		Impact assessment not required	No, as material is sourced from within the same sediment cell, which does not have INNS. Material is not deposited in this area (only extracted and moved to Eastoke). Over time, the material will move back to where it was recycled from through long shore drift. Therefore not applicable.

Chichester Harbour Water Body: Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydro-morphology	No	Beneficial – Beach management working with the hydro-morphology, alternative would be a hard defence to adjacent frontages.
Biology: habitats	No	No sensitive habitats present
Biology: fish	No	There will not be an impact on Fish.
Water quality	No	Material is only recycled from this area above the tide line and therefore will not impact water quality
Protected areas	Potential risk to Shellfish Waters. Natura 2000 Sites see Habitat	There is a very low potential risk to these receptors, however these are not new works and have been ongoing in one form or other since 1985. There have not been any failures or recorded impacts from the works to date, so the risk is very low that they would materialise now.

	Regulation Assessment (Section 9 of the ES. Avoided through appropriate mitigation.	Shellfish Water is present within Chichester Harbour
Invasive non-native species	No	No, as material is sourced from within the same sediment cell, which does not have INNS. Material is not deposited in this area (only extracted and moved to Eastoke). Over time, the material will move back to where it was recycled from through long shore drift. Therefore not applicable.

5.4.4 Langstone Harbour Water Body

5.4.4.1 Details of water bodies adjacent to South Hayling Island that could be impacted by BMP activities:

Water body ¹	Description, notes or more information
WFD water body name	<i>Langstone Harbour</i>
Water body ID	GB580705130000
River basin district name	<i>South East River Basin District</i>
Water body type (estuarine or coastal)	<i>Estuarine</i>
Water body total area (ha)	<i>1890.75ha</i>
Overall water body status (2015)	<i>Moderate</i>
Ecological status	<i>Moderate</i>

Chemical status	<i>Good</i>
Target water body status and deadline	<i>Good by 2027</i>
Hydro-morphology status of water body	<i>Good by 2027</i>
Heavily modified water body and for what use	<i>Supports Good. It also states for the reasons of Coastal protection and flood defence</i>
Higher sensitivity habitats present	• <i>Non in the vicinity of the site</i>
Lower sensitivity habitats present	• <i>Cobbles, gravels and shingle (total area within Langstone harbour 24.94ha or 0.2494km²)</i> <i>The habitat directly affected by these works is the shingle beach of South Hayling Island</i>
Phytoplankton status	<i>Not classified</i>
History of harmful algae	<i>Yes</i>
WFD protected areas within 2km	• <i>Conservation of Wild Birds Directive</i> • <i>Habitats Directive</i> • <i>Nitrates Directive</i> • <i>Shellfish Directive</i> • <i>Urban Waste Water Treatment Directive</i>

5.4.4.2 Langstone Harbour Water Body: Specific risk information

Section 1: Langstone Harbour Water Body: Hydro-morphology

Consider if your activity:	Yes	No	Hydro-morphology risk issue(s)
Could impact on the hydro-morphology (for example morphology or tidal patterns) of a water body at high status		<u>Impact assessment not required</u>	<i>No – There has been monitoring since 1985 and the beach is a very dynamic environment. One of the aims of the scheme is to work with the natural hydro-morphology that is why beach management has been selected as the preferred option instead of a hard defence.</i> <i>The Langstone Harbour waterbody supports good hydro-morphology.</i> <i>Therefore, no further assessment required.</i>
Could significantly impact the hydro-morphology of any water body		<u>Impact assessment not required</u>	No, the Langstone Harbour Water body has been assessed above and it has been concluded that it will not impact hydro-morphology. The scale of the works with this water body is very small The process of beach management maintains the natural hydro-morphology.
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	<u>Impact assessment not required</u>	<i>Langstone Harbour Water Body is heavily modified for Coastal Protection, and Flood Protection.</i> <i>Although this scheme functions as both a flood</i>

			<i>defence and also a coastal protection scheme, it is working with the natural environment rather than building a hard defence. It is not believed that this softer form of flood and coastal erosion risk management, working with natural coastal processes is contributing to the reason that the Langstone Harbour water body is designated as heavily modified.</i>
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Conclusions for hydro-morphology: It can be concluded that these works will not have a negative impact the morphology in the immediate vicinity of the works or further afield. The works can be seen to have a positive effect by retaining sediment within the system through the recycling activities.

Section 2: Langstone Harbour Water Body: Biology

Habitats

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger		No to all – impact assessment not required	No, total area / foot print of the works / activity within the Langstone Harbour Waterbody (site area) is 0.0144km ² (<i>Actual working area as BMP U 8 has very limited working = 0.000582km² – See section 3 for details</i>).
1% or more of the water body's area			Total area of water body =18.9075km ² 1% of water body area =0.189 km ² Total area of works = 0.0144 km ² less than 1% impacted.
Within 500m of any higher sensitivity habitat			No. Therefore no assessment needed
1% or more of any lower sensitivity habitat			Cobble area 0.2494km ² Total area of works 0.0144km as marked by site plan however the Actual working area as BMP U 8 has very limited working = 0.000582km² Area of works on Lower sensitive Habitats = 6% however the Actual Impact = 0.2% therefore less than 1 no assessment needed.

Section 2: Langstone Harbour Water Body: Biology - Fish

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but		Go to next	No.

could delay or prevent fish entering it or could affect fish migrating through the estuary		section	Potential impacts will be above the tide line in the mouth of the Estuary. There will be no piling as part of the works, and a very low level of noise caused by the machinery on the beach. The scale of these works is very small scale. It aims to resolve a very local erosion issue.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)		Impact assessment not required	No, as above.
Could cause entrainment or impingement of fish		Impact assessment not required	No, as above.

Section 3: Langstone Harbour Water Body: Water quality

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)		Impact assessment not required	Potential impacts will be above the tide line in the mouth of the Estuary. The scale of these works is very small scale. It aims to resolve a very local erosion issue.

Is in a water body with a phytoplankton status of moderate, poor or bad		Impact assessment not required	No the area is not moderate, poor or bad in status for phytoplankton.
Is in a water body with a history of harmful algae		Impact assessment not required	Yes, this is linked to a sewerage treatment plant and some pollution incidents in the past. Clean material may be brought into this area and not extracted from it therefore no assessment needed. Mostly just minor reprofiling of beach.

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	The Langstone Harbour Water body does have an issue with chemicals on the EQSD Langstone Harbour does not have any issues with Mercury and its compounds. There will be no discharge as a result of the works. Shingle very coarse so no contaminants can bind to it.
It disturbs sediment with contaminants above Cefas Action Level 1		Impact assessment not required	As above

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	No, no discharge resulting from the works

Section 4: Langstone Harbour Water Body: WFD protected areas

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment		Yes, the site is within or adjacent to the following protected sites • The Solent Maritime SAC - See HRA Section 9 of the Environmental Statement for detail (conclusion included in WFD Assessment Section 4.8) • Chichester and Langstone SPA - See HRA Section 9 of the Environmental Statement for detail (conclusion included in WFD Assessment Section 4.8) • Shellfish Waters - see WFD Assessment (see Section 4.6) • Nutrient sensitive areas - see WFD Assessment (see Section 4.9)

Section 5: Langstone Harbour Water Body: Invasive non-native species (INNS)

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	No, material sourced from within the same sediment cell. Material sourced from off shore will come from licenced aggregate sites so impacts of INNS have already been assessed within the aggregates licence application.

Langstone Harbour Water Body: Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydro-morphology	No	Scale of works are very small cannot be considered to be impacting Hydro-morphology
Biology: habitats	No	No high sensitive sites. Low sensitivity for actual working area. Cannot be considered to be impacted due to the small scale of works within this area.
Biology: fish	No	There will not be an impact on Fish.
Water quality	No	Only clean sediment will be deposited in this area to resolve a much localised erosion problem.
Protected areas	Potential Receptors due to Natura 2000 sites this is assessed within the	The scale of the works is very small. Shellfish Water is present further within Langstone Harbour. Impacts from such small scale works would be very unlikely to have an impact further into the harbour.

		HRA (Section 9 of the ES). Avoided through appropriate mitigation.	
Invasive species	non-native	No	No material being source from within the same sediment. Therefore increased risk of non invasive species from that sound naturally on the beach.

5.4.5 Isle of Wight East Water Body

5.4.5.1 Details of water bodies adjacent to South Hayling Island that could be impacted by BMP activities:

Water body ¹	Description, notes or more information
WFD water body name	<i>Isle of Wight East</i>
Water body ID	<i>GB6507055330000</i>
River basin district name	<i>South East River Basin Management Plan</i>
Water body type (estuarine or coastal)	<i>Coastal</i>
Water body total area (ha)	<i>26369.664</i>
Overall water body status (2015)	<i>Good by 2015</i>
Ecological status	<i>Good by 2015</i>
Chemical status	<i>Good by 2015</i>
Target water body status and deadline	<i>2015</i>
Hydro-morphology status of water body	<i>Not Assessed</i>

Heavily modified water body and for what use	<i>Yes for Coastal Protection and Navigation</i>
Higher sensitivity habitats present	<i>No Habitats in the vicinity</i>
Lower sensitivity habitats present	<i>Cobble, Shingle and Gravel shore</i>
Phytoplankton status	<i>Not monitored</i>
History of harmful algae	<i>Not monitored</i>
WFD protected areas within 2km	• <i>Bathing Waters</i> • <i>Conservation of Wild Birds Directive</i> • <i>Habitats Directive</i> • <i>Nitrates Directive</i> • <i>Shellfish Directive</i> • <i>Urban Waste Water Treatment Directive</i>

5.4.5.2 Isle of Wight East Water Body: Specific risk information

Section 1: Isle of Wight East Water Body: Hydro-morphology

Consider if your activity:	Yes	No	Hydro-morphology risk issue(s)
Could impact on the hydro-morphology (for example morphology or tidal patterns) of a water body at high status		<u>Impact assessment not required</u>	<i>No – There has been monitoring since 1985 and the beach is a very dynamic environment. One of the aims of the scheme is to work with the natural hydro-morphology that is why beach management has been selected as the preferred option instead of a hard defence.</i>

			<i>The Isle of Wight East waterbody does not have a high status regarding hydro-morphology</i> <i>Therefore, no further assessment required.</i>
Could significantly impact the hydro-morphology of any water body		<u>Impact assessment not required</u>	No, the IOW East Water body has been assessed above and it has been concluded that it will not impact hydro-morphology. The process of beach management maintains the natural hydro-morphology.
Is in a water body that is heavily modified for the same use as your activity		<u>Impact assessment not required</u>	<i>The IOW East is heavily modified for Coastal Protection and for Flood Defence.</i> <i>Although this scheme functions as both a flood defence and also a coastal protection scheme, it is working with the natural environment rather than building a hard defence (as set out in the Eastoke Sectoral Strategy, and the North Solent Shoreline Management Plan). It is not believed that this softer form of flood and coastal erosion risk management, working with natural coastal processes is contributing to the reason that the IOW East water body is designated as heavily modified.</i>

Section 2: Isle of Wight East: Biology - Habitats

Habitats

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger		No to all – impact assessment not required	No, total area / footprint of the of the works / activity within the Solent waterbody is 0.0037Km2
1% or more of the water body's area			1% of water body area = 2.367km2 Total area of works = 0.0037KM therefore no assessment needed
Within 500m of any higher sensitivity habitat			No. BMP U1, at the extremity of the site does have saltmarsh within 500m of the works, however it is not geographically connected to the habitat and therefore there is no mechanism or pathway to impact this

			<i>sensitive site.</i>
1% or more of any lower sensitivity habitat			<i>No. Area of the works is 0.0037km². Area of cobbles is 8.22 km²=0.045% of total habitat affected by the whole beach management activities (this will not occur in any one year) therefore no assessment needed</i>

Section 2: Isle of Wight East Water Body: Biology - Fish

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		Go to next section	No, Potential impacts will be above the tide line in the mouth of the Estuary. There will be no piling as part of the works, and a very low level of noise caused by the machinery on the beach. Chichester Harbour is not a migratory fish route, therefore the potential Impact is not the IOW East is even lower.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)		Impact assessment not required	No
Could cause entrainment or impingement of fish		Impact assessment not required	No as above

Section 3: Isle of Wight Water Body: Water quality

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)		<u>Impact assessment not required</u>	Any Impacts are considered to be less than levels experienced during a storm. For example, with suspended solids, the beach is very exposed and therefore, the wave exposure is large. Any impacts from the rainbowing are considered to settle within a short space of time (Less than 1 tidal cycle (24hours)). Rainbowing can only take place approximately 1 to 2 hours either side of high tide, to allow the dredger to have the depth to get close enough to the shore. Therefore any potential impacts are very short lived. The total length of time to import the material from the Chichester Harbour entrance beneficial reuse is dependent on the amount of material needed and also the amount of suitable material available per dredging campaign. For example in 2015, the operation took approximately 4 days and in 2016 it took approximately 10 days (only working over the high tide period) Therefore any potential impacts would not be continuous. The material being rainbowed onto the beach is chosen specifically to be fairly large; therefore there will be a limited level of fines in the material rainbowed onto the beach. There have not been any reported problems in the past of impacts that have affected water quality since the works have taken place since

			1985.
Is in a water body with a phytoplankton status of moderate, poor or bad		Impact assessment not required	No, there are no results for the area IOW East Phytoplankton
Is in a water body with a history of harmful algae		Impact assessment not required	No , it is not monitored

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	The IOW East Water body does not have an issue with EQSDs. However the sediment that is recycled within the Beach Management activities is from within the beach itself which is very coarse material and therefore contaminants will not be able to bind the shingle. The material used from the Chichester Harbour Approach channel also originates from the beach and therefore is also very coarse.
It disturbs sediment with contaminants above Cefas Action Level 1		Impact assessment not required	As above.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	No, no discharge from the works

Section 4: Isle of Wight East water body: WFD protected areas

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area	Requires impact assessment		Yes. Within or adjacent to the following protected areas • The Solent Maritime SAC - See HRA Section 9 of the ES for details (conclusion included in WFD Assessment – Section 4.8). • Chichester and Langstone SPA - See HRA Section 9 of the ES for detail conclusion included in WFD Assessment – Section 4.8). • Bathing Waters - see WFD Assessment (Section 4.7). • Nutrient sensitive areas - see WFD Assessment (Section 4.9).

Section 5: Isle of Wight East Water Body: Invasive non-native species (INNS)

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS		Impact assessment not required	No, material sourced from within the same sediment cell.

Isle of Wight East Water Body: Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydro-morphology	No	Beneficial – Beach management working with the hydro-morphology, alternative would be a hard defence.
Biology: habitats	No	No.
Biology: fish	No	There will not be an impact on Fish.
Water quality	No	The may be a small impact on Water Quality but it will be local in scale and temporary in nature. The maximum duration of any of the works is 4 weeks.
Protected areas	Potential Receptors	There is a very low potential risk to these receptors, however these are not new works and have been ongoing in one form or other since 1985. There have not been any failures or recorded impacts from the works to date, so the risk is very low that they would materialise now. .

		Shellfish Waters – Not present in this location
Invasive species	non-native No	No - material being sourced from within the same sediment cell, which is clear of INNS.

5.5 Scheme level detailed impact assessment - further assessment as a result of the scoping exercise

5.5.1 Shellfish Waters

Both Chichester and Langstone harbour are designated as Shellfish Waters, as illustrated by **Figure 4.4**. There is a third shellfish water called Solent East however it is over 4.8km from the site and is therefore not considered to be impacted in anyway, due to the distance, size of the water body and dilution factors.

The WFD requires all protected shellfish waters to comply with their individual standards. Designated Shellfish Waters are required to comply with mandatory standards for parameters including faecal bacteria levels in shellfish flesh.

The objectives for designated shellfish waters is to protect and, where needed, improve the quality of shellfish waters in order to support shellfish (bivalve and gastropod molluscs) life and growth, and thus contribute to the high quality of shellfish products directly edible by man. This objective will be achieved by meeting the imperative standards and endeavouring to observe the guideline standards set.

Potential impacts of the continuation of the Hayling Island Beach Management works on Shellfish Waters are assessed in Section 10 (of the ES).

In any works of this nature there is potential for sediment disturbance during the works, which could increase the level of suspended solids and reduce dissolved oxygen in the water column. Any chemical and bacterial contamination in the sediment could be remobilised. These changes, resulting from sediment disturbance, could lead to localised failures of the environmental quality standards for Shellfish Waters. It is therefore important that sediment disturbance from the proposed works is kept to a minimum to avoid detrimental impacts on shellfish water quality. Also the quality of the sediment and the risk of contamination should also be considered. In the case of the Hayling Island Beach Management works the following factors reduce the risk of this potential impact further;

- The duration of the works: the works take place up to twice a year for a limited period of time between 2 and 4 weeks, so any impacts are temporary.
- The size of the sediment to be recycled from the beach: the particle size of the sediment is large shingle 20mm+, so even if contaminants were present in this location they would not be able to bind to the sediment to be remobilised. The sediment is therefore considered to be clean.
- The level of wave exposure experienced on the South Hayling Beach, has two potential impacts;

- a. levels of suspended solids would naturally have a high level of fluctuation and therefore biota present in this location would be able to tolerate this natural fluctuation so any small changes as a result of the works would not have a negligible impact on the shellfish.
 - b. Due to the level of exposure, the level of fines found naturally on the beach is low.
- The rainbowing of sediment ashore from the reuse of the Chichester Harbour Master's navigational safety dredge of the Chichester Harbour approach channel will have a slightly higher % of fines than that found on the beach. However the ESCP undertake grab samples prior to the dredge to ensure that the sediment to be reused is of the appropriated size and that the levels of fine are low. If the level of fines are too high, the dredged material would be rejected, this is because if the percentage of fines is too high there is a risk of potential pollution and also if levels of fines are elevated, it can cause the beach to 'cliff' which destabilises the beach. Also the sediment in the Chichester approach channel originates from the beach and is therefore not likely to be contaminated in anyway, for the reasons detailed above.
- Material that is imported from offshore sources is either cleaned prior to import if brought in by road, or information is provided by the aggregates abstraction company about the material to be imported, these aggregates area also chosen for the size of sediment which is suitable and therefore large and there is a very low risk of contaminants binding to the particles.
- The rainbowing has to take place at high tide (1 to 2 hr either side of high tide) to allow the hopper barge to get close enough to the beach to rainbow the material ashore, the tidal currents over this timescale move away from Chichester Harbour which has a shellfish water, toward the open coastal waters which are not classified at a Shellfish water.
- Due to the fact that the works can only take place over the high tide any potential impacts are also not continuous and only temporary.
- When material is extracted from the beach it takes place above the tide line in the dry and therefore will not impact water quality. Any material rainbowed onto the beach is also placed above the water line.

5.5.1.1 Summary of impacts on Shellfish waters

For all the reasons identified above it can be concluded that the Beach Management Activities will not have an impact on the Shellfish Waters of Chichester or Langstone harbours and in particular Chichester Harbour Water Body. In addition there is no

evidence that the works have ever caused an issue with Shellfish historically. Any temporary impacts will be localised.

Extra safeguards will be put into place through the recommended conditioning of a Construction Environmental Management Plan [CEMP] for the ongoing works, to ensure all relevant precautions are taken. There will also be a mitigation and monitoring plan in place, so that if in future any currently unidentified impacts were identified through the monitoring programme, changes to the works can be made to ensure that any impacts are mitigated for, this will be reviewed every five years (see mitigation table and conclusion in **Section 21 of the Environmental Statement**). No long term negative impact on the Shellfish waters is expected from the delivery of the beach management works.

5.5.2 Bathing Waters

There are three designated bathing waters within the area of Beach Management Works.

- Eastoke
- Beachlands Central
- Beachlands west

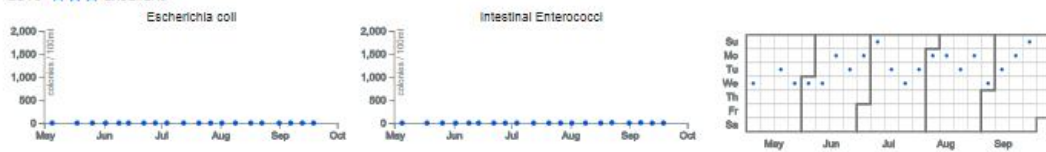
The objective, from the end of 2014, for bathing waters designated under the revised Bathing Waters Directive is to preserve, protect and improve the quality of the environment and to protect human health by complementing the Water Framework Directive 2000/60/EC. The directive classifies waters into four categories - excellent, good, sufficient and poor. Bathing waters must be classified as at least 'sufficient' standard by 2015. This objective will be achieved by meeting the 'sufficient' quality standards of the revised Bathing Waters Directive; and by taking such realistic and proportionate actions considered appropriate with a view to increasing the number of bathing waters classified as 'excellent' or 'good' .

The Bathing water season when measurements are taken and therefore standards should not be breached is from the 1st week in May until the 30th September. The water quality is tested for intestinal enterococci and E. coli, faecal bacteria, which cause eye and ear infections and gastroenteritis.

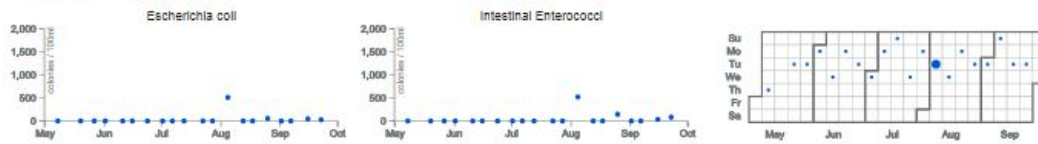
The results from all of the Hayling Island Bathing waters have been recorded as excellent for at least the last 4 years (data readily available from 2013 onwards). This is illustrated in **Figure 5.1** for Eastoke Bathing waters, the area closest to the highest intensity of works

Eastoke

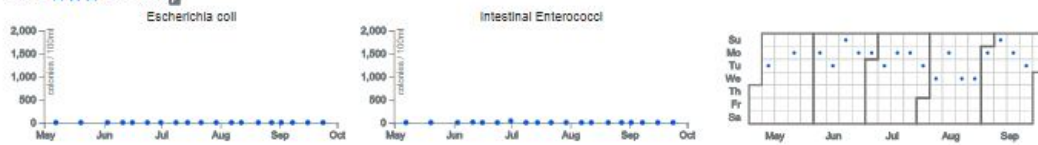
2016 ★★★★★ excellent



2015 ★★★★★ excellent



2014 ★★★★★ excellent



2013 ★★★★★ excellent

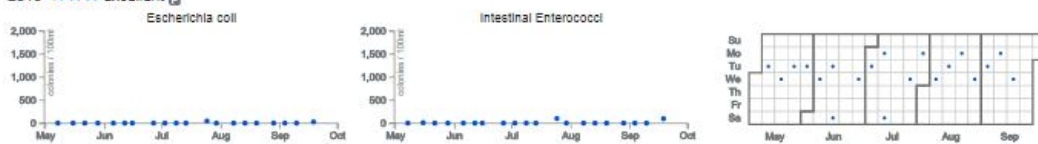


Figure 5.1 Bathing water results for Eastoke Beach from 2013 to 2016

The Hayling Island beach management works generally take place either in March, outside of the Bathing water season so these works can be scoped out of any further assessment. The other time of year when works usually take place is in September. This is within the bathing water season, but it can be seen from **Figure 5.1** that the bathing waters have not been affected in the last 4 years whilst works have been taking place. There is no reason why the extension of the geographical area would alter the impacts of the works on the bathing waters. The working takes place above the tide line.

As stated above the nature and size of the sediment on the Hayling Island beach is large and therefore contaminants (including bacteria) are unable to bind to the coarse sediments.

Water quality at a bathing water site is dependent upon the type and area of land (the catchment) draining into the water body, and activities undertaken within it. There are no streams within the beach area; most streams and drainage from the island enters into the adjacent harbours and will not be impacted by our works.

Environment Agency samplers make observations of litter present on the beach at every visit; this includes assessments of sewage debris, litter and tar. At Eastoke for

the four year (2013-2016) assessment period where data is available, sewage debris was not noted at this site.

Another factor that can affect bathing waters is seaweed (macroalgae) and phytoplankton (microscopic algae). These are a natural part of the marine and freshwater environment, however in excess levels can cause problems. This is not the case on the south coast of Hayling island, due to the exposed nature of the beach.

Discharges from sewage treatment works have improved substantially in England since the 1980s.

5.5.2.1 Summary of impacts on Bathing Waters

The works up to now have not impacted bathing waters, even though the works have to take place in September, which is within the bathing water season. Works have not had an impact on the bathing waters in the past and are not predicted to in the future. Any potential impacts are not considered to change as a result of changing the area that recycling can take place and therefore it can be concluded that there will be no impact on bathing waters. Our BMP operations enhance natural coastal processes along this frontage. Given the minor scale of each operation, it would be difficult to cause any impacts above natural levels.

5.5.3 Natura 2000 Sites

The area of the works is heavily designated under the Habitats and Birds Directives. The beach Management works are located both within and adjacent to the boundaries of the Chichester and Langstone Harbours SPA and Ramsar site and Solent Maritime SAC and the proposed Dorset and Solent SPA (see **Figure 4.5**).

The objective for Natura 2000 Protected Areas identified in relation to relevant areas designated under the Habitats Directive is to protect and, where necessary, improve the status of the water environment to the extent necessary to achieve the conservation objectives that have been established for the protection or improvement of the sites natural habitat types and species of Community importance in order to ensure the site contributes to the maintenance of, or restoration to favourable conservation status.

The objective for Natura 2000 Protected Areas identified in relation to relevant areas designated under the Birds Directive is to protect and where necessary improve the water environment to the extent necessary to achieve the conservation objectives

that have been established for the protection or improvement of the site in order to ensure that the site contributes to the conservation (survival and reproduction in their area of distribution) of birds species listed in Annex I of the Birds Directive.

Where Natura 2000 Protected Areas form part of a water body or where a water body lies within a Natura 2000 Protected Area, the Water Framework Directive status objectives apply in addition to the requirement to maintain at favourable conservation status or restore it to that status. Some water bodies that coincide with Natura 2000 Protected Areas have been designated as artificial or heavily modified; in these cases the aim to achieve good ecological potential applies in addition to the objective of favourable conservation status. This applies to all four water bodies that have the potential to be impacted by the works.

The protected area objectives are independent of the water body status objectives but all objectives have to be met in accordance with each of the EC Directives that underpin them.

5.5.3.1 Conclusions of the HRA and therefore impacts on Natura 2000 sites

A separate HRA has been prepared to demonstrate that the beach management works can continue and be extended in geographical area without having a Likely Significant Effect on the European environmentally designated sites and their interest features. This is set out in Section 9 on the Environmental Statement 'Information for HRA'. Our HRA concludes that the proposed Hayling Island BMP, in its entirety, will not have a Likely Significant Effect on the environment following the adoption of the specific mitigation measures that it concludes with.

5.5.4 Nutrient Sensitive Areas (Nitrate Vulnerable Zones)

Nutrient-sensitive areas, including areas identified as Nitrate Vulnerable Zones under the Nitrates Directive or areas designated as sensitive under Urban Waste Water Treatment Directive (UWWTD). Local areas to the BMP are highlighted in **Figure 5.2**.

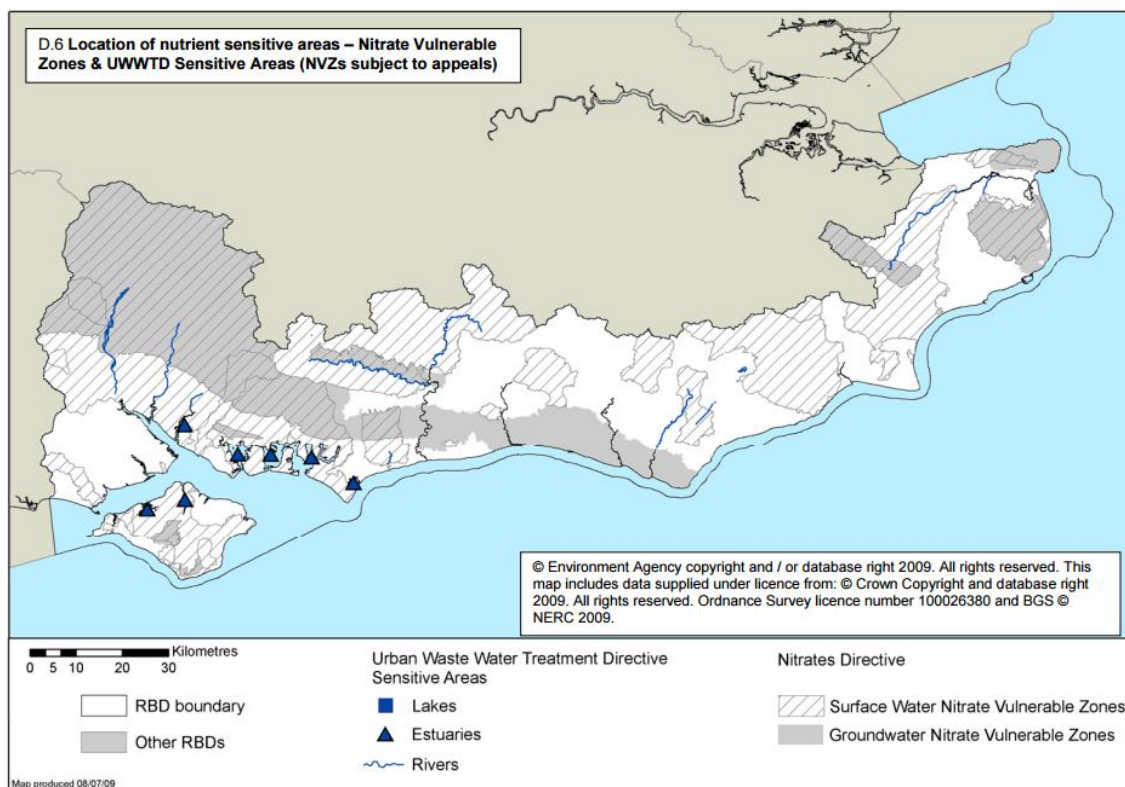


Figure 5.2 Location of nutrient sensitive areas – nitrate vulnerable zones

The general objective of the Nitrates Directive is to:

- reduce water pollution caused or induced by nitrates from agricultural sources; and
- prevent further such pollution.

This objective will be achieved through designating Nitrate Vulnerable Zones (NVZs) and action programmes being implemented within them. NVZs comprise all land draining to “polluted waters” as defined by the Directive. A Code of Good Agricultural Practice has also been published, which provides advice to all farmers on how to reduce nitrate losses to the environment.

Nutrient Sensitive Areas (Urban Waste Water Treatment Directive)

The general objective of the Urban Waste Water Treatment Directive (UWWTD) is:

- To protect the environment from the adverse effects of urban waste water discharges and waste water discharges from certain industrial sectors.

A sensitive area in the UWWTD is a water body identified as affected by eutrophication or having a surface water abstraction affected by elevated nitrate concentrations. Designating Sensitive Areas is a trigger for action to reduce or prevent further pollution caused by nutrients.

The general objective for Sensitive Areas will be achieved by ensuring discharges from relevant urban waste water treatment plants meet the appropriate emission standards set out in the Directive.

Although the works are within a Nitrate Sensitive area there will be no discharge from the site that could increase levels of nitrate within any of the waterbodies and therefore this is not considered in any more detail.

5.6 Summary of impacts on WFD water bodies, including 'In-Combination' impacts

In summary, the works and the geographical extension of the beach management works into the future are not believed to prevent the potentially affected water bodies meeting their WFD objectives. Some of the impacts are positive and are considered to help meet the WFD objectives longer term (See Section 6).

There is the potential for 'in-combination' impacts, arising from other policies, schemes and initiatives within the water bodies and these have been considered in **section 5 of the Habitat Regulations Assessment** and **section 20 of the Environmental Statement**. These are not repeated here, however where potential 'In-combination' impacts have been identified, the HRA has identified mitigation measures to prevent them. The HRA concluded that the South Coast Hayling Island Beach management works will not cause an 'in-combination' likely significant effect on the Natura 2000 sites, due to the mitigation measures identified. This conclusion also applies to the WFD water bodies affected by this scheme.

The WFD water bodies affected by this scheme have additional mitigation measures identified, the implementation of which will help meet the objectives of the individual water bodies. **Section 6** demonstrates how the proposed scheme will help deliver these, in order to further contribute towards achieving the water body objectives.

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6. CONTRIBUTIONS TOWARDS ACHIEVING WFD WATERBODY OBJECTIVES

As set out in **Section 5** of this assessment, the water bodies affected by the Beach Management works have a number of wider mitigation measures, which can help these water bodies meet their objectives. These are repeated in Tables 6.1 and 6.2 below

Table 6.1: How the BMP works will contribute towards the Solent Water Body mitigation Measures

At present, there are two mitigation measures identified within the Solent Water Body, which the BMP activities will help contribute to:

Mitigation Measure	Does this scheme contribute
26) Sediment Management	Yes. Sediment management is the main aim of the Beach Management Plan and on going operations, so the works directly contribute to wards the Water Framework Direction Mitigation.
28) Manage Disturbance	Yes, the scheme will monitor and manage disturbance on the beach from the works of both the SPA birds and Vegetated shingle communities and drift line vegetation.

Langstone Harbour Water body

At present, there is only one mitigation measure identified within the Langstone Water Body, which the BMP activities will help contribute to:

Mitigation Measure	Does this scheme contribute
37)Retain Habitats	Yes. The proposed works through the mitigation measures will protect and retain Habitats and species such as vegetated shingle, as part of the works through detailed surveys.

Chichester Harbour Water Body

Physical Modifications have been confirmed as an issue linked to Coastal protection, however the main aim of the BMP and on-going operations is to work with the environment through beach management so there is only very limited requirement for hard defences. It is therefore not considered to be contributing to this impact. No mitigation measures have been identified for Chichester Harbour at this current time, that the scheme will help contribute to.

Isle of Wight East

No mitigation measures have been identified at the current time for the East Wight Water Body.

7. CONCLUSIONS

Is the proposal likely to prevent the WFD water bodies meeting their objectives, or negatively affect shellfish waters, bathing waters and the Natura 2000 sites?

The concept of beach management is to work with natural coastal processes to maintain the required standard of coastal flood and erosion protection to the communities at Eastoke.

Extensive mitigation measures have been included in the Habitat Regulations Assessment to prevent any impacts on Natura 2000 sites and protected habitats and species.

As set out within this WFD assessment, we are not expecting negative impacts on any of the adjacent WFD water bodies, with the works partially contributing to their objectives. The works are generally of a short term, localised nature and involve the movement of clean and coarse material only. BMP works have never historically caused impacts on any aspect of the WFD, given that they have been taking place in one form or another since 1985.

The works are a significant distance from any Shellfish Waters, with no impacts expected within the harbours, where they are located. The works also generally take place outside of the Bathing Water Season.

It is not anticipated that this proposal will prevent the WFD water bodies meeting their objectives, or negatively affect shellfish waters, bathing waters and the Natura 2000 sites – alone, or ‘in-combination’.