



Appendix D - Langstone Water Framework Directive Assessment



Langstone FCERM Scheme:

Water Framework Directive Assessment

Project	Langstone FCERM scheme:
Title	Water Framework Directive Assessment

Document History

Date	Revision	Prepared	Approved
02/25	1	HJ	GH

Executive Summary

This Water Framework Directive [WFD] Compliance Assessment has been prepared to support the planning permission and marine licence applications for the Langstone Flood and Coastal Erosion Risk Management (FCERM) scheme. This is to confirm whether the Langstone scheme could impact the Langstone and Chichester Harbour water body, and whether it complies with the South East River Basin Management Plan (RBMP). This report provides an overview of the WFD process, based on guidance of how to undertake a WFD assessment in the estuarine and coastal environment (Environment Agency, 2017).

The WFD aim is for all waterbodies to be at good status. This WFD assessment will confirm whether the Langstone scheme could cause or contribute to deterioration of water body status, and / or whether it could jeopardise the water body achieving good status.

Although several potential pathways were identified that could particularly affect Langstone Harbour water body receptors, the assessment identified that the scheme will not impact the potential of the Langstone or Chichester Harbour water body to meet good status or affect the current status of the water body. Providing the mitigation measures detailed are incorporated into the proposed scheme, the resultant impacts will not cause deterioration of the status of the Langstone or Chichester Harbour water body or jeopardise these water bodies from achieving good status both now and in the future.

Acronyms

AEP	Annual Exceedance Probability
AoO	Advice on Operations
BMEP	Biodiversity Mitigation and Enhancement Plan
CEMP	Construction Environmental Management Plan
EIA	Environmental Impact Assessment
ECP	England Coast Path
ES	Environmental Statement
FCERM	Flood and Coastal Erosion Risk Management
GEP	Good Ecological Potential
HBC	Havant Borough Council
HMWB	Heavily Modified Water Body
HRA	Habitat Regulations Assessment
HTL	Hold The Line
INNS	Invasive Non-Native Species
MMO	Marine Management Organisation
NPI	North Portsea Island
ODN	Ordnance Datum Newlyn
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SMP	Shoreline Management Plan
SWBGS	Solent Wader Brent Goose Strategy
SoP	Standard of Protection
SPA	Special Protection Area
WFD	Water Framework Directive

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1 Introduction

This WFD compliance assessment has been produced to determine whether the proposed Langstone Flood and Coastal Erosion Risk Management (FCERM) Scheme in Havant, Hampshire complies with the objectives of the WFD. This assessment considers the proposed works, for which planning permission and a marine licence are being applied for. Other supporting information includes an Environmental Statement (ES), Planning, Design and Access Statement, Construction Environmental Management Plan (CEMP) and Habitats Regulations Assessment (HRA).

1.1 Background to the Langstone FCERM Scheme

The second round of the North Solent Shoreline Management Plan (SMP) was formally adopted in 2010. The SMP policy unit covering the Langstone FCERM scheme is 5a18 and the SMP set a policy of Hold the Line (HTL) for all three epochs (i.e., from 2005 until 2105) for this section of coastline.

Following on from the SMP, The Portchester to Emsworth Coastal Flood and Erosion Risk Management Strategy (Environment Agency, 2012) looked at how the SMP policy can be implemented at a more local level and identified areas where work may be required over the next 50 years. The Strategy recommendations were adopted by Havant Borough Council (HBC) in 2013 for improvement of the defences at Langstone through a phased approach.

The assets at risk from flooding from a 0.5% Annual Exceedance Probability (AEP) (1 in 200 year) tidal flood event (present day) include:

- 53 residential properties
- 4 non-residential properties
- Critical infrastructure including the A3023 road crossing to Hayling Island
- Heritage assets

Due to sea level rise, by 2040 it is predicted that this will increase to 59 residential properties and 4 non-residential properties at risk from a 0.5% AEP (1 in 200) year event.

AEP refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which may be calculated to have a 1% chance to occur in any one year, is described as 1% AEP. The leading option is to construct a variety of defences along the frontage to provide a scheme with a 50-year life. The Scheme will provide a standard of protection (SoP) of 0.5% AEP (1 in 200 year) present day, which will reduce to 1 in 75 years SoP over the 50-year life. The SoP provided by a defence is the severity of flood event that it should protect against.

1.2 Summary of Proposed Scheme

The proposed Langstone FCERM Scheme will improve the standard of flood defences and coastal erosion protection over an approximately 1 km length of coastline and would consist of

of a mix of earth bunds, reinforced concrete sea walls and sheet pile walls. **Figure 1.1** shows the location and extent of the scheme and the associated frontages.

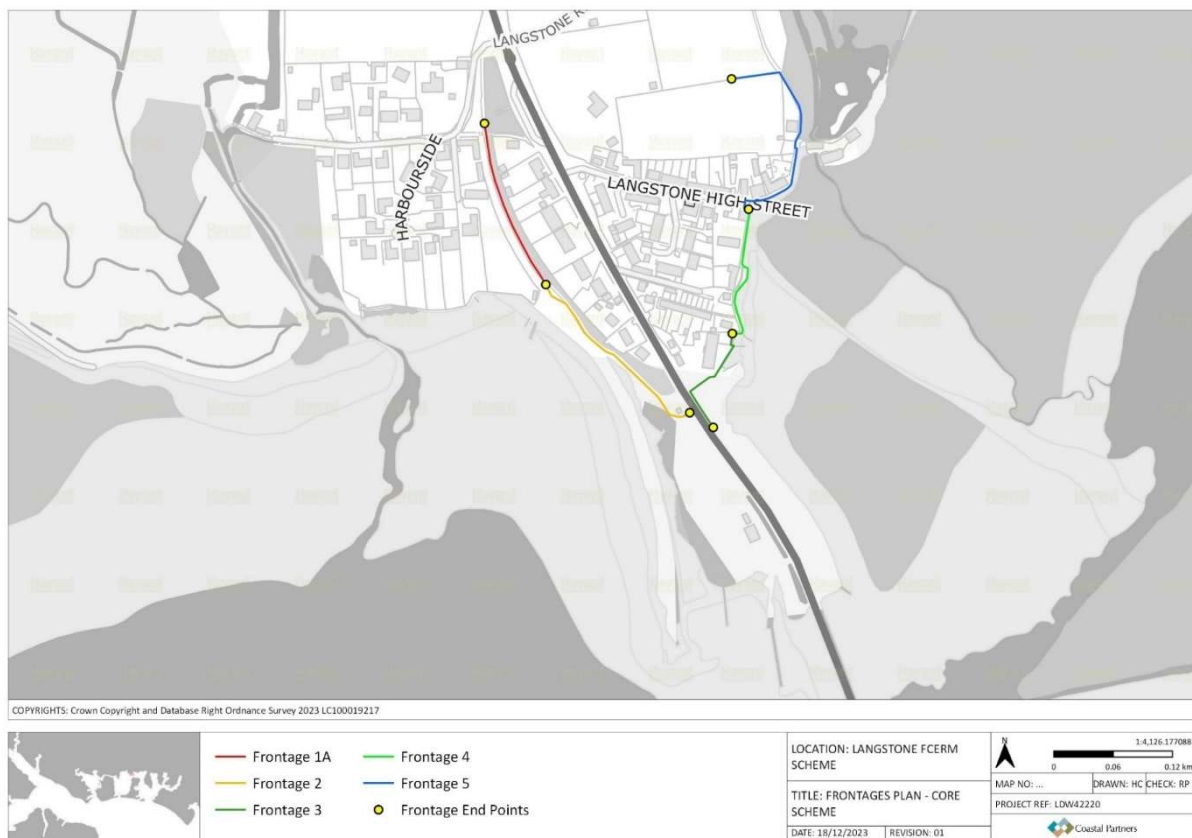


Figure 1.1: Location and extent of the Langstone FCERM scheme and associated frontages

A summary description of each frontage is provided below, with more detailed frontage design information provided in Section 3 of the Environment Statement:

- **Frontage 1A: Billy Line North.** The flood defence comprises of a raised earth embankment and follows the line of the existing Billy Line cycleway (a National Cycle Route 2 cycleway).
- **Frontage 2: Billy Line South.** The design for Frontage 2 consists of a sheet-piled wall. Raised earth embankments are included where the defence alignment needs to cross existing utility pipes. Frontage 2 ties in with Frontage 1A and the existing higher levels on the A3023 road.
- **Frontage 3: A3023 road to 9 Coastguard Cottages (The Look Out).** Frontage 3 consists of a continuous flood defence that largely comprises of four flood defence structures. These structures include the A3023 flood wall, Ship Inn car park raised earth bund, Ship Inn flood wall and Ship Inn Annex flood wall. A flood gate is also to be provided between the Ship Inn and the Ship Inn Annex flood walls.
- **Frontage 4: The Look Out to No. 24 Langstone High Street (the Winklemarket).** Frontage 4 consists of new reinforced concrete flood walls in front of the existing garden walls that run along the frontage. One flood gate (at Green Cottage) and one demountable flood barrier (at the pedestrian access adjacent to the Watch Tower) will be provided to ensure robust continuity of the defence.
- **Frontage 5: Langstone High Street to the field north of the Royal Oak.** Frontage 5 consists of a continuous flood defence that largely comprises of five structures. These

structures include the High Street flood gates, the Royal Oak flood wall, the allotment flood wall, the Footpath flood wall that runs west of the Mill Pond, and an earth embankment in the field north of the Royal Oak. Demountable flood barriers will be provided between the section transitions and flood gates will be provided at No.21 High Street.

For further detail on the proposed design for each frontage please refer to **Section 3.2 of the ES**, the general arrangement, cross sections, elevations and landscaping plans and **the Detailed Design Report (AECOM, 2024a) and the Materials Report (AECOM, 2024b)**.

1.2.1 Discharges

Surface water drainage is proposed to be installed in conjunction with the defences in Frontages 2, 3, 4 and 5, as described in **Section 3.2.6 of the ES**, the **Drainage Strategy Report (AECOM, 2024b)** and shown on drawings LANG-ACM-SW-F2-DR-ZZ-011041, LANG-ACM-SW-F2-DR-ZZ-021042, LANG-ACM-SW-F2-DR-ZZ-021043, LANG-ACM-SW-F3-DR-ZZ-011045, LANG-ACM-SW-F4-DR-ZZ-011049 and LANG-ACM-SW-F5-DR-ZZ-011051. No formalised drainage is proposed to be installed in Frontage 1A as surface water will drain to either side of the raised embankment, similar to the existing drainage pathways in this frontage. Overall the drainage catchment will not change.

1.2.2 Compounds for the Phase 5 works

A main site compound will be set up that will remain in situ throughout the construction works, located in the fields to the north of the Royal Oak (Langstone Meadows) as shown on the Site Location Plan (drawing LANG-ACM-ZZ-ZZ-DR-ZZ-011001). Two satellite compounds will also be required – one located in the Ship Inn car park and one within the Langstone Sailing Club boat storage area.

1.2.3 Programme and Timings of the works

The construction works for the proposed Scheme are expected to commence in March 2025, subject to all necessary approvals and funding being secured. The works are expected to be undertaken primarily over two spring/summer periods (April 2025 to September 2025 and April 2026 to September 2026), with some lower impact activities not requiring heavy machinery, being undertaken during the autumn / winter months. However, the programme of works is subject to change.

1.3 Report Aims and Objectives

The purpose of the WFD is to establish a framework for protecting inland surface waters, transitional waters, coastal waters and ground waters. All surface waters (rivers, lakes, estuaries and coastal waters) and groundwaters have been divided up into discrete units called water bodies. Water bodies are the basic unit that are used to assess the quality of the water environment and to set targets for environmental improvements. The water bodies that are in close proximity to the scheme are illustrated in **Figure 1.2**. In particular the proposed works overlap with the Chichester Harbour water body but are also adjacent to the

Langstone water body.

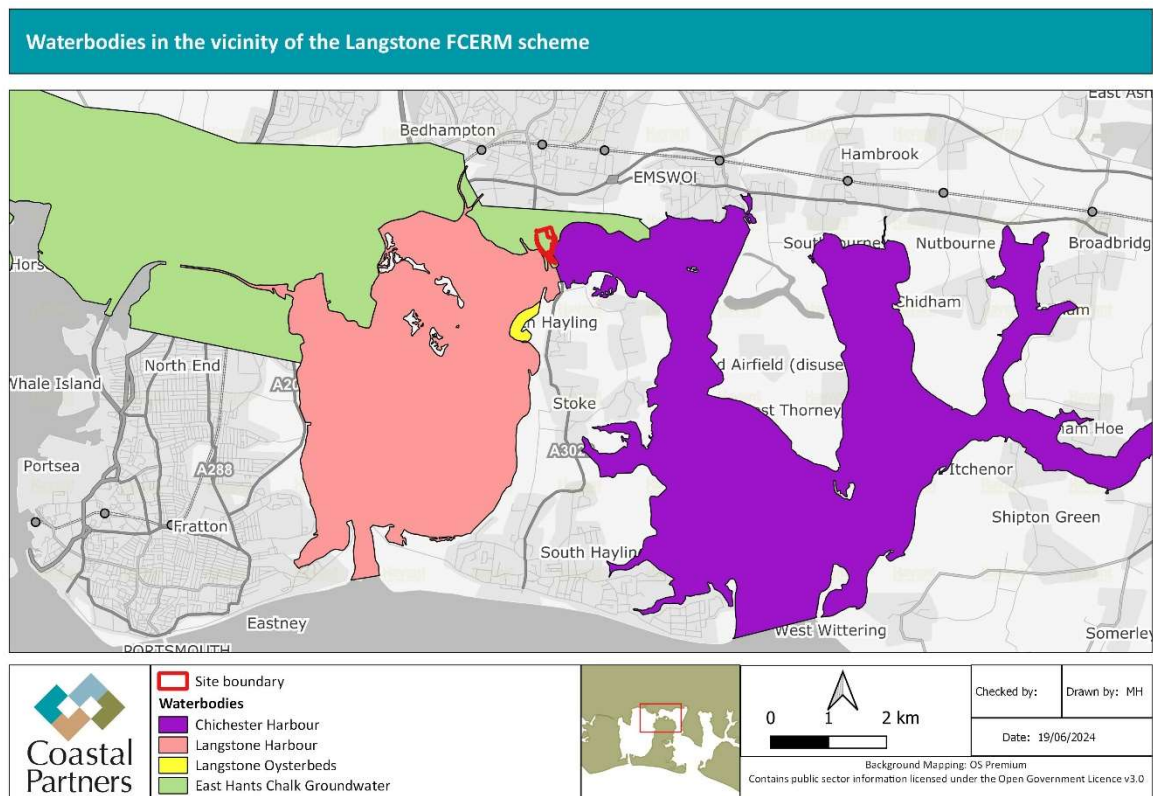


Figure 1.2: WFD water bodies

This WFD Assessment has been structured to present a view as to whether the proposed scheme will (either alone or in-combination with other projects) have the potential to prevent the Langstone Harbour and Chichester Harbour water body meeting its objectives and will identify and promote the delivery of any mitigation measures that may be required. It will also consider potential impacts on other European protected sites, including shellfish waters, bathing waters and National Network sites. The assessment process is explained below, but in summary, the following is provided:

- Information on the proposed FCERM scheme;
- An overview of the WFD process and method of assessment;
- Background information regarding relevant water bodies and protected sites;
- Scoping of impacts;
- Assessment of potential impacts and mitigation;
- Contributions towards achieving water body objectives; and
- Conclusions.

This WFD assessment confirms the proposed mitigation for the Langstone scheme and using the scoping and assessment guidance prescribed within the 'Clearing the Waters for All' initiative from the Environment Agency (2017).

2 The Water Framework Directive [WFD]

The WFD was adopted and came into force in 2000. It established a legislative framework for the protection of surface waters (including rivers, lakes, transitional waters (estuaries) and coastal waters) and groundwater. The WFD was transposed into law in England and Wales in 2003, it was then updated in 2015 and again in 2017 into 'The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017' (the 2017 Regulations).

2.1 River Basin Management Plans

The framework for delivering the Directive is through River Basin Management Plans (RBMP). The UK has been split into several River Basin Districts (RBDs). The Langstone scheme falls entirely within the South East River Basin District. The RBMPs describe the current state of the water environment for each River Basin District, the pressures affecting the water environment, the objectives for protecting and improving it, and the programme of measures needed to achieve the statutory environmental objectives of the WFD. RBMPs are subject to a six-year planning cycle and are routinely reviewed and updated to ensure compliance with the overall WFD objectives. RBMPs were first published in December 2009 and were subsequently updated in February 2016 and updated again in 2022. The plans will be reviewed and updated again by December 2027.

As stated in the RBMP, the environmental objectives have been set for each of the protected areas and water bodies in the RBD. Achieving the objectives will optimise the benefits to society from using the water environment. The environmental objectives are legally binding. All public bodies must have regard to these objectives when making decisions that could affect the quality of the water environment.

The Langstone FCERM Scheme falls within the South East RBD, the spatial extent of which is illustrated in **Figure 2.1**.

The environmental objectives set out in the South East RBMP are:

- to prevent deterioration of the status of surface waters and groundwater;
- to achieve objectives and standards for protected areas;
- to aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status;
- to reverse any significant and sustained upward trends in pollutant concentrations in groundwater;
- the cessation of discharges, emissions and losses of priority hazardous substances into surface waters; and
- progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.

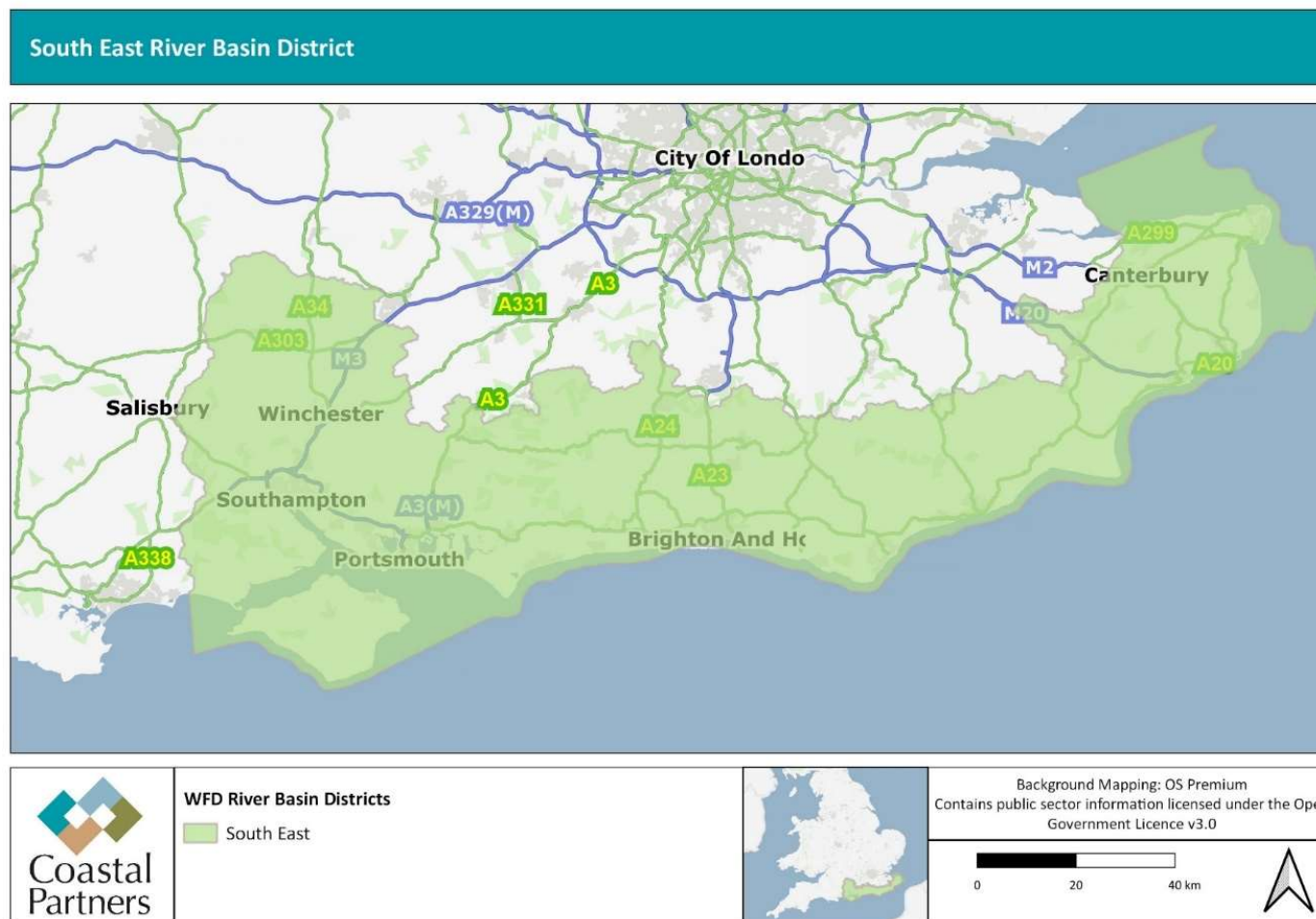


Figure 2.1: Spatial extent of South East River Basin District

2.2 Overview of Waterbodies

Each RBD has been characterised into smaller management units known as water bodies. The WFD requires all water bodies initially to reach Good Ecological Status or Good Ecological Potential (GEP) by 2015. The River Basin Management Plans (RBMPs) were then updated, with objectives set for 2021 if they were achievable / fully funded, or 2027 or later, if there was less certainty in a means of achieving the status.

The WFD applies to all water bodies, including those that are man-made. The RBMPs classify the status of transitional and coastal waters using information on the ecological, chemical and hydro-morphological quality of a body of water.

The overall aims and objectives of the WFD are to:

- enhance the status and prevent further deterioration of surface water bodies, groundwater bodies and their ecosystems;
- ensure progressive reduction of groundwater pollution;
- reduce pollution of water, especially by priority substances and certain other pollutants;
- contribute to mitigating the effects of floods and droughts;
- achieve at least good surface water status for all surface water bodies and good chemical status in groundwater bodies by 2027. Alternatively, artificial or heavily modified water bodies are to achieve good ecological potential; and
- promote sustainable water use.

The WFD recognises that physical alterations may have been undertaken to support the use of a water body for a purpose (e.g., for flood defences). The hydro-morphology describes the hydrological and geomorphological processes that support the biological elements. In the case of coastal and transitional water bodies these factors include:

- tidal regimes,
- depth variation,
- structure of the intertidal zone,
- bed structure,
- substrate and quantity.

Where the hydro-morphology has been significantly impacted by anthropogenic effects, for example dredging or flood defences then the waterbody can be classified as a Heavily Modified Water Body (HMWB). Instead of achieving Good Ecological Status the objective has shifted to GEP by 2021, 2027, or later. GEP is the best ecology that can be achieved in a HMWB whilst still enabling (FCERM) works to be undertaken to protect people and property from flooding. The highest level of classification for a HMWB body is good. Whereas the classification for non-heavily modified water bodies ranges from bad, then poor, moderate, good and finally the top classification is high. All waterbodies considered within this WFD assessment are classified as heavily modified apart from Langstone Oysterbeds Transitional Water body which is artificial.

Ultimately the WFD assessment must be able to conclude that the objectives set out within the WFD are adhered to. Article 4(7) states that: *Member States will not be in breach of this Directive when:*

- failure to achieve good groundwater status, good ecological status or, where relevant, good ecological potential or to prevent deterioration in the status of a body of surface water or groundwater is the result of new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater, or

- failure to prevent deterioration from high status to good status of a body of surface water is the result of new sustainable human development activities and all the following conditions are met:

a) All practicable steps are taken to mitigate the adverse impact on the status of the body of water;

b) The reasons for those modifications or alterations are specifically set out and explained in the river basin management plan required under Article 13 and the objectives are reviewed every six years;

c) The reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development, and

d) The beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.

There are two WFD classifications for water bodies: ecological and chemical. For a water body to obtain overall 'good' status, it must have 'good' status in both categories.

Ecological status is recorded on the scale of 'high', 'good', 'moderate', 'poor' or 'bad'. 'High' denotes largely undisturbed conditions and the other classes represent increasing deviation from this natural condition. The ecological status classification for the water body is determined from the worst scoring quality element. This means that the condition of a single quality element can cause a water body to fail to reach its WFD classification objectives.

Chemical status is assessed by compliance with environmental standards for chemicals that are listed in the European Commission (2008) Environmental Quality Standards Directive (2008/105/EC). These chemicals include priority substances, priority hazardous substances, and eight other pollutants carried over from the substance-specific directives. Chemical status is recorded as 'good' or 'fail'. The chemical status classification for the water body is determined by the worst scoring chemical.

Water body status is then defined in the following levels in the Water Framework Directive (**Table 2.1**). As stated previously, the highest level a HMWB can reach is Good Ecological Potential.

Table 2.1: Definition of water body status

Status	Definition
High	• Near natural conditions. • No restrictions on the beneficial uses of the waterbody. • No impacts on amenity, wildlife or fisheries.
Good	• Slight change from natural conditions as a result of human activity. • No restrictions on beneficial uses of the waterbody.

	• No impact on amenity or fisheries. • Protects all but the most sensitive wildlife.
Moderate	• Moderate change from natural conditions as a result of human activity. • Some restrictions on the beneficial uses of the water body. • No impact on amenity. • Moderate impact on wildlife and fisheries.
Poor	• Major change from natural conditions as a result of human activity. • Some restrictions on the beneficial uses of the water body. • Some impact on amenity. • Moderate impact on wildlife and fisheries.
Bad	• Severe change from natural conditions as a result of human activity. • Significant restrictions on the beneficial uses of the water body. • Major impact on amenity. • Major impact on wildlife and fisheries with many species not present.

2.3 The WFD Assessment process

This assessment has followed the Environment Agency guidance 'Water Framework Directive assessment: estuarine and coastal waters - How to assess the impact of your activity in estuarine (transitional) and coastal waters for the Water Framework Directive (WFD)'. The guidance is called 'Clearing the Waters for All' (Environment Agency, 2017).

The guidance states that a WFD assessment can have up to three stages. The result of each stage determines if the next stage needs to be completed. The Langstone scheme WFD assessment includes all three stages. These stages are described in the following sections.

2.3.1 Stage 1 – Screening

The screening process excludes any activities that do not need to go through to the scoping stage or subsequent impact assessment stage. Any impact that is low risk can be screened out.

Low risk activities include:

- Any activity that fulfils the criteria required to comply with the self-service marine licence process or accelerated licence activity.
- Certain maintenance activities, e.g., maintaining pumps, removing blockages within 10 metres of an existing structure to maintain flows, replacing or removing existing pipes.
- 'Over water' replacement or repairs e.g., bridges, piers and jetty surfaces.
- If the activity has taken place between 2009 and 2014 (when evidence was collected for the 2015 RBMPs) and this process has not changed in any way or if the operation has not resulted in a pollution incident.

If the activities for a project do not fulfil these criteria the scoping stage needs to be completed.

2.3.2 Stage 2 – Scoping

The aim of the scoping exercise is to identify the receptors that are potentially at risk from the activity or activities and therefore need to be considered further in the impact assessment.

Within the guidance there is a scoping template to follow that identifies the receptors and details what impacts, if exceeded, need to be taken forward to the impact assessment stage (stage 3).

The receptors highlighted within the scoping template that are at potential risk from activities are:

- Hydro-morphology
- Biology – habitats
- Biology – fish
- Water quality
- Protected areas
- Invasive Non-Native Species (INNS)

The guidance states that this process is required for each water body that could potentially be affected either directly or indirectly or if any risks have been identified.

2.3.3 Stage 3 – The Impact Assessment

Each receptor identified within each water body in the scoping stage (Stage 2) as being at risk from the proposed activities is then taken forward into the impact assessment stage to be assessed further.

Any activity has the potential to create pressures on the marine environment. The JNCC pressure-activities matrix is used to identify which activity or activities could affect the receptors identified in the scoping stage. From these identified activities, an assessment is carried out to determine if there is a potential pathway or causal link specifically for the scheme. If there is no pathway or causal link the activity is ruled out and is not assessed further.

If there is a potential pathway, then the level of impact is assessed to identify whether it could be reduced by taking avoidance or reduction measures to reduce the level of impact to an acceptable level. The identified measures then need to be incorporated into the scheme. The assessment then considers whether:

- The resultant impact could cause deterioration to the water body at a water body scale;
- There could be an impact on a protected area;
- The risk of moving or introducing INNS has been reduced;
- The activity could jeopardise the water body getting to its target status or jeopardise it reaching good status in the future;
- The activity could jeopardise the water body mitigation measures in place now or planned for the future.

The impact assessment is carried out in relation to each water body and activity alone and then in-combination.

The WFD also sets out specific mitigation measures for each RBD. Additional consideration needs to be given to any measures that the scheme could potentially deliver that could contribute towards achieving the water body objectives.

A final conclusion is then made as to whether the scheme / project is WFD compliant.

3 Water Framework Directive Assessment

As described in **Section 2.3**, the WFD process can consist of three stages; screening, scoping and impact assessment. The following sections describe the WFD assessment process for the scheme.

This assessment has taken a precautionary, risk-based approach. This assessment is based on the latest level of design information at the time of submitting our consent applications.

3.1 Stage 1 – Screening

The scheme does not meet the criteria required to screen out at this phase, so all activities have been taken through to the scoping stage.

3.2 Stage 2 – Scoping

At Scoping stage, the guidance states that this process is required for each water body that could potentially be affected either directly or indirectly or if any risks have been identified.

To determine which water bodies would potentially be affected by the proposed works, the following waterbodies have been considered within 2 km of the proposed works:

- Chichester Harbour Transitional Water Body (GB580705210000) – Overlapping with the proposed works
- Langstone Harbour Transitional Waterbody (GB5807051300000) – Immediately adjacent to the scheme
- Langstone Oysterbeds Transitional Water body (GB510070073000) – Approximately 630m southwest
- East Hants Chalk groundwater body (GB40701G502700) - Overlapping with the proposed works

3.2.1 Summary of scoping results

A scoping template was previously completed for the Langstone and Chichester Harbour water bodies as an Appendix to the Environmental scoping report (November 2020) and can be found in **Annex A - C**. These scoping tables have been updated since submission to reflect the details that have developed within the proposed scheme. A summary of the scoping template can be found in **Table 2.1**. Langstone Oysterbeds has been scoped out primarily due to the distance of this waterbody. Any indirect effects are considered unlikely and any indirect impacts will be assessed and mitigated for within the adjacent Chichester and Langstone Harbour water bodies which have been scoped in.

In addition, this assessment will also consider the scheme's impact on other Protected Areas that are reliant on water, including Shellfish Waters, areas designated under the Nitrates Directive, the Urban Waste Water Treatment Directive and Drinking Water Directive and National Network sites. The impact on the National Network sites is considered in detail within the Information for HRA (**Appendix C of the ES**), which should be read in conjunction with this WFD assessment.

Table 3.1: Summary of receptors scoped in for each transitional water body

Receptor	Chichester Harbour	Langstone Harbour	Langstone Oysterbeds
Hydromorphology	Yes	Yes	No
Biology: habitats	Yes	Yes	No
Biology: fish	Yes	Yes	No
Water Quality	Yes	Yes	No
Protected areas	Yes	Yes	No
Invasive Non-Native species	No – Considering best practice measures in place	No - Considering best practice measures in place	No - Considering best practice measures in place

3.2.1.1 Groundwater body scoping

The East Hants Chalk groundwater body overlaps with the scheme. The proposed works include piling, which is a key activity that can interact with groundwater bodies. However, the scale of the works are considered to be very small in the context of the water body. In addition, these works will not introduce any new pollutants or alter the abstraction or recharge rates of the groundwater. Borehole investigations as part of the scheme have also confirmed works are taking place above the main body of the chalk aquifer. Consequently the chemical and quantitative status of the WFD groundwater body will not be impacted by the sheet piling.

A review of historic maps has also been undertaken, which indicates land reclamation within the vicinity of the scheme as part of the upgrade of the bridge between Langstone and Hayling Island (which opened in 1956). This includes on the east side of the bridge, in Langstone where no piling works are proposed. A number of geo-environmental samples, including for contamination, were also collated and analysed within the Environmental scoping report (Coastal Partners, 2020). There was one exceedance of the threshold for soil organic matter (SOM1) located behind Langstone Sailing Club and adjacent to the footpath (WS03). This marginal exceedance in one PAH (Dibenzo(a,h)anthracene) at one sample location is considered likely to be associated with an isolated pollution incident. Due to the low potential for contamination no significant potential impacts on land quality and hydrology during construction were anticipated and this pathway was therefore scoped out.

Any risk of pollution to the groundwater would be at a lower level and therefore a lower risk than the more sensitive Transitional Waters and therefore all the mitigation to protect them will also protect the groundwater. This primarily includes following best practice through the CEMP. Overall, there is no mechanism by which these works can interact with the groundwater bodies and therefore the East Hants Chalk Groundwater body is scoped out of further assessment.

3.2.1.2 Surface water body scoping

West of Frontage 5 is the Langstone Mill Pond which is fed by the Lymbourne chalk stream to the north. These are waterbodies located approximately 10 m from the proposed works. However the potential for pathways to effect water quality are considered limited to pollution

from spillage which can be managed through best practice measures which will be established through finalisation of the CEMP. This will strictly control construction activities including ensuring fuelling operations, servicing of equipment and fuel storage take place away from the waterbodies and at least 10m away from sensitive habitats, in accordance with agreed refuelling risk assessment and method statements. Consequently, there are no mechanism by which these works can interact with the surface water bodies and they are therefore scoped out of further assessment.

4 Protected areas

The WFD requires that activities are also in compliance with other relevant legislation, such as the Habitats Directive (92/43/EEC as amended), Birds Directive (2009/147/EC), Ramsar Convention, Bathing Water Directive (2006/7/EC), Nitrates Directive (91/676/EEC), Urban Waste Water Treatment Directive (91/271/EEC) and the provisions of the Shellfish Waters Directive (2006/113/EC) (now repealed and integrated into the WFD). This section provides further details on the consideration of these protected areas to the Scheme.

4.1 Shellfish Waters

Chichester and Langstone Harbours are designated as shellfish waters, as illustrated by **Figure 4.1**. The proposed scheme is specifically adjacent to Langstone Harbour and Emsworth Channel Shellfish water which have therefore been scoped into this assessment. 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 are to protect and, where needed, improve the quality of shellfish waters 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.

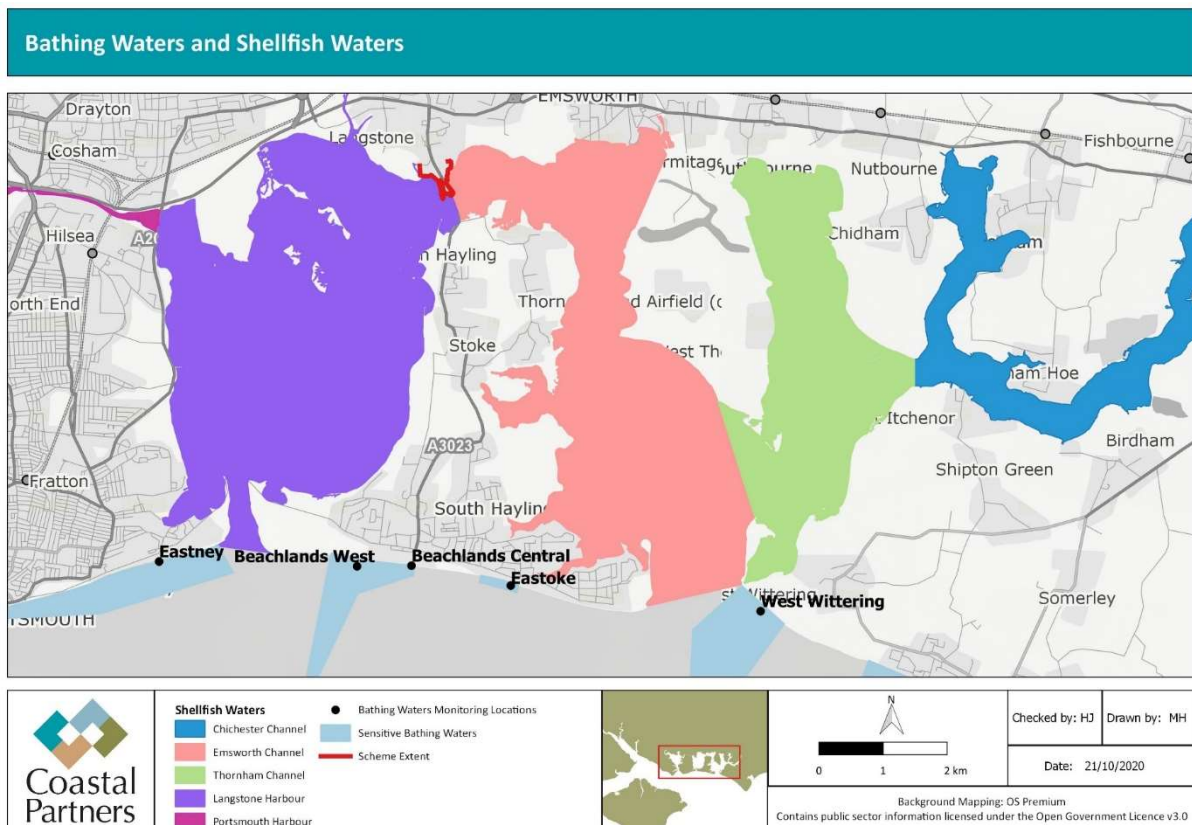


Figure 4.1: Bathing waters and shellfish waters

4.2 Bathing Waters

Chichester and Langstone Harbour do not have any designated bathing waters within them. The nearest bathing waters are over 6 km south, located within the Solent water body.

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.

Due to the distance of the bathing waters from the proposed Langstone scheme (see **Figure 4.1.**), assessment of these has been scoped out of the impact assessment and will not be considered further.

4.3 National Site Networks

The scheme is located within and adjacent to the Solent Maritime Special Area Conservation (SAC) and the Chichester and Langstone harbours Special Protection Area (SPA) and Ramsar (see **Figure 4.2.**).

The objective for National Site Networks 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 National Site Networks 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 bird species listed in Annex I of the Birds Directive.

Where National Site Networks form part of a water body or where a water body lies within a National Site Network, the WFD 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 National Site Networks 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.

The protected area objectives are independent of those for water body status, but all objectives have to be met in accordance with each of the EC Directives that underpin them. Consequently the following National Site Networks are scoped in due to the proximity to the proposed scheme:

- Solent Maritime SAC; and
- Chichester and Langstone Harbours SPA and Ramsar.

A separate Habitats Regulations Assessment [HRA] has been prepared to demonstrate that the proposed scheme can be constructed without having a likely significant effect on the European environmentally designated sites and their interest features (see **Appendix C** of the ES).

A summary of the protected areas relevant to the Chichester and Langstone Harbour water body are set out in **Table 4.1**. As detailed within this table, the Urban Waste Water Treatment Directive, as it is related to sewerage discharges and the Nitrate Directive is linked to agricultural sources of pollution so are not relevant to this scheme. These protected areas have therefore been scoped out as there are no potential pathways and they will not be assessed in any further in this assessment.

Table 4.1: Protected areas relevant to the Chichester and Langstone Harbour water body

Directive	Protected Area	Relevant to Langstone Scheme (within 2 km)
Habitats and Species Directive (SAC)	Solent Maritime	Yes (within/adjacent)
Conservation of Wild Birds Directive (SPA)	Chichester and Langstone Harbours	Yes (within/adjacent)
Ramsar Convention 1971	Chichester and Langstone Harbours	Yes (within/adjacent)
Shellfish Water Directive	Chichester Harbour (Emsworth Channel)	Yes - The proposed scheme is within/adjacent to the Chichester Harbour Shellfish waters and a classified bivalve mollusc harvesting

Directive	Protected Area	Relevant to Langstone Scheme (within 2 km)
	Shellfish Waters (within/adjacent) Langstone Harbour Shellfish Waters	area for Native Oyster and adjacent to Langstone Harbours Shellfish Waters.
Urban Waste Water Treatment Directive	Chichester Harbour Langstone Harbour	No - there is no potential pathway between the proposed works and the Urban wastewater Treatment Directive as there is no additional discharge from the scheme itself. Consequently, despite the proximity to the proposed works, the Urban Wastewater Treatment Directive will not be assessed further.
Nitrates Directive	Reference 'ET2'	No – the Nitrates Directive (1991) aims to protect water quality across Europe by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. Therefore, not relevant to this Coastal and Flood Protection Scheme and will not be considered further.

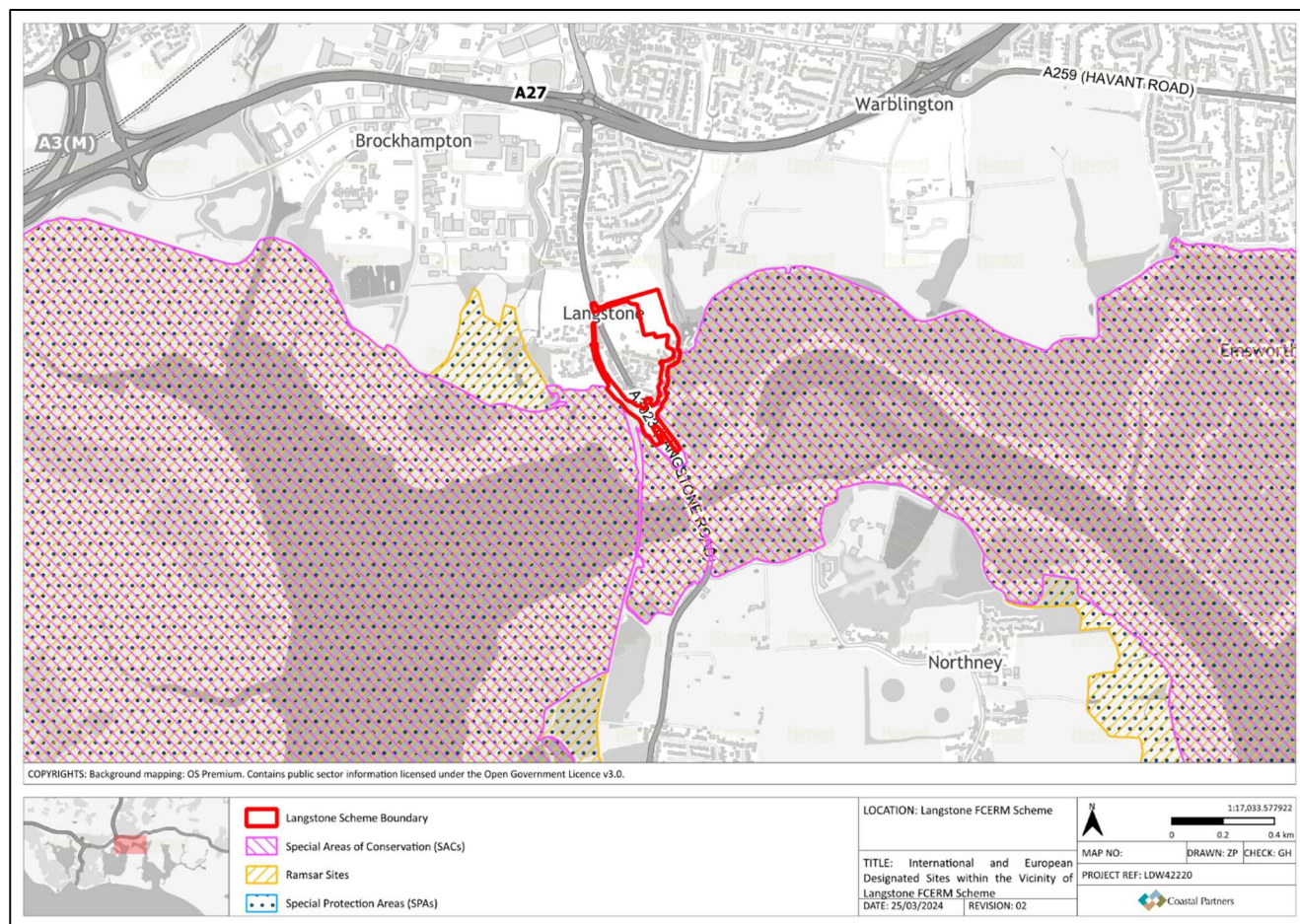


Figure 4.2: Location of the National Site Networks relevant to the WFD of scheme

4.4 Stage 3 – Impact Assessment

Stage 2 (scoping) has identified that an impact assessment is required for a number of receptors associated with Chichester Harbour and Langstone Harbour water bodies, which overlaps with the scheme. These have been brought forward to this stage 3 impact assessment to assess whether the Langstone scheme has the potential to prevent the Chichester Harbour and Langstone Harbour water body meeting their objectives both now and in the future. This assessment will also identify and promote the delivery of any mitigation measures.

As highlighted in **Section 6.2**, the following receptors have been scoped in:

- Hydro-morphology – Chichester and Langstone Harbour water bodies are heavily modified in relation to coastal processes (the same use as activity)
- Biology: habitats - Saltmarsh is within 500m of Chichester and Langstone Harbour waterbodies
- Biology: fish - Piling is proposed adjacent to Chichester and Langstone Harbour waterbodies which may affect migrating fish and/or marine fish spawning or nursery areas. The proposed piling could also impact normal fish behaviour due to potential for underwater noise
- Water quality - Works on the foreshore could take over 14 days. The proposed works could therefore affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle as works are proposed on the foreshore for Chichester and Langstone Harbour waterbodies. Langstone Harbour Water Body also has a history of harmful algae
- Protected areas are located adjacent to Chichester and Langstone Harbour waterbodies:
 - Shellfish waters – Emsworth Channel (Chichester Harbour) and Langstone Harbour.
 - National Site Networks; Chichester and Langstone Harbours SPA and Ramsar and Solent Maritime SAC

Some of these receptors also indirectly apply to Langstone Oysterbeds water body, located approximately 630m southwest, however this impact assessment would apply by default and any associated mitigation would also lower any impact on the Langstone Oysterbeds water body. Consequently as detailed in Appendix B3 Langstone Oysterbeds is scoped out of further assessment.

4.4.1 Hydromorphology

No new cross-shore structures are proposed as part of the Scheme. The new defences will follow the existing alignment, albeit slightly seawards in Frontage 3,4, and 5 where encasement or sheet piles are required to ensure the stability of existing/new structures as part of the design. Throughout the design process, changes to the footprint of the existing structures, and consequently effects associated with hydromorphology, are being minimised as far as technically feasible. Minor encroachment of approximately 183m² worst case into the water body will occur, however, considering the small size, any changes to hydromorphology that will occur will be very small and localised, limited to the immediate vicinity of any new structure. Consequently the proposed works will not result in any discernible changes to the hydromorphology of the Chichester Harbour water body. In addition, effects on coastal processes were scoped out of the Environmental Impact Assessment (EIA) for this 'core scheme'.

Overall whilst both the Chichester and Langstone Harbour waterbody are heavily modified for coastal protection, which is the same use as the activity, any changes to hydromorphology that will occur will be very small and localised and negligible compared to the current background conditions. Consequently, the proposed works are not expected to lead to a deterioration of the

assessed hydromorphological elements within the Chichester or Langstone Harbour transitional water bodies, nor prevent these water bodies from meeting their WFD objectives.

4.4.2 Biology, habitats

The proposed works are within 500 metres of saltmarsh that is a higher sensitivity habitat. As detailed within the **ES Chapter 8 (Marine Ecology)**, Saltmarsh habitat is present within both the Chichester and Langstone Harbour water bodies. On the Chichester Harbour side, pioneer saltmarsh is present as a mosaic within an extensive area of intertidal mudflat habitat, with large amounts of fragmentation between saltmarsh communities (**Plate 4.1**). The saltmarsh patches are dominated by *Spartina anglica* in monoculture stands. The density of saltmarsh is highest at the eastern extent of the study area and becomes more sparse and fragmented westwards towards Langstone Village.



Plate 4.1: Fragmented pioneer saltmarsh habitat, primarily comprising *Spartina anglica*, within extensive intertidal mudflat habitat within Chichester Harbour

There are two tidal creeks in Langstone Harbour, between the Langstone Spit and the sailing club (Frontage 2) (Error! Reference source not found. **(a) – (c)**) and at the mouth of the Langbrook Stream (Error! Reference source not found. **(d)**Error! Reference source not found.). These areas support higher quality, more diverse saltmarsh with low-mid marsh and pioneer zone communities present as well as *Spartina* swards. Species present within the saltmarsh habitat within the tidal creeks on the Langstone Harbour side of the study area include golden samphire (*Limbarda crithmoides*), perennial glasswort (*Sarcocornia perennis*), sea lavender (*Limonium vulgare*), lax-flowered sea lavender (*Limonium humile*), sea purslane (*Atriplex portulacoides*), cordgrass (*Spartina* sp.) and glasswort (*Salicornia* sp.).

The Solent Maritime SAC is designated for the Annex I habitats ‘Spartina swards (*Spartinion maritimae*)’ (1320), ‘Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)’ (1330) and Salicornia and other annuals colonizing mud and sand (1310). These saltmarsh habitats within the SAC are therefore considered to be of international importance. Saltmarsh is also a Habitat of Principal Importance listed under Section 41 of the NERC Act 2006.

There has been a significant loss and degradation of saltmarsh habitat within both Langstone and Chichester Harbours, and in Chichester Harbour water body it has been estimated that if the current rate of loss continues, the harbour could lose all its remaining saltmarsh habitat by the middle of the next century (Bardsley *et al.*, 2021). The decline in saltmarsh extent within the study area is evidenced by comparison of two datasets from 2016-2019 (as shown in **Figure 4.3**) and 2005 (as shown in **Figure 4.4**).

Langstone FCERM Scheme - Saltmarsh Extent and Zonation 2016-2019

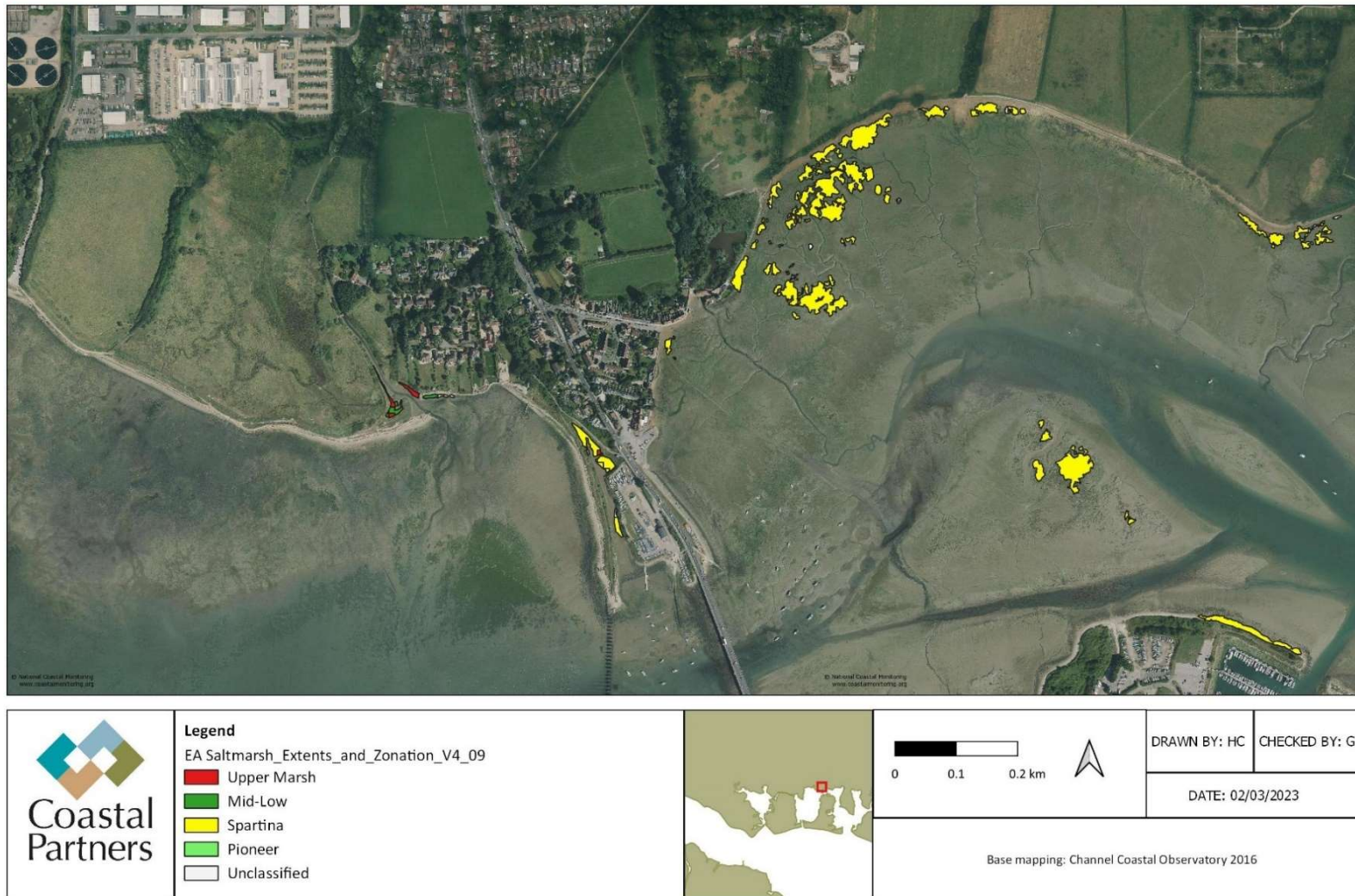


Figure 4.3: Saltmarsh extent and zonation in the Langstone FCERM scheme area 2016-2019 (source: Environment Agency, 2023b).

Langstone FCERM Scheme - Saltmarsh Extent in 2005



Figure 4.4: Saltmarsh extent and zonation in the Langstone FCERM scheme area in 2005 (source: Chichester Harbour Conservancy Skyveg survey 2005).

As detailed in **Section 8.6.1** of the ES, direct disturbance of the intertidal habitats within the Scheme works area will occur during the construction works as a result of activities such as heavy plant movements on the foreshore, excavation of sediments for foundation preparation, breaking out of the existing defences, piling and installation of the new defence structures. This impact will occur in Chichester Harbour waterbody side, in Frontages 3, 4 and 5 (Ship Inn to No.21 High Street) where marine works are proposed. There will be no disturbance impacts on intertidal habitats in Langstone Harbour water body during the construction of Frontages 1A and 2, or in Chichester Harbour during the construction of the landward sections of Frontage 5, as these works are either set back from the foreshore or can all be completed from the landward side of the works area.

The impact of the disturbance of intertidal habitat from the proposed scheme will be temporary and confined to the immediate area of the construction works. The intertidal working area will be clearly marked out at commencement of the works through the establishment of a silt curtain laid out along the working extent at a distance of 20 metres from the existing sea wall.

Temporary disturbance to the foreshore will be experienced from the first access to lay the silt curtain until the new sea walls are completed and any haul routes and the silt curtain are removed.

During construction works, the number of foreshore access points will be limited to the Ship Inn car park slipway, the High Street and via the allotment adjacent to No.21 High Street. Once on the foreshore, plant will need to track along the foreshore to reach sections of the sea wall construction with material deliveries and to undertake excavation, piling, concrete construction and foreshore reinstatement activities, as well as for installation of handrailing and cladding as part of the final finishes. The haul route will be across the existing foreshore (which is already used as a vehicular access route by the frontline properties in the village), using a temporary surface to prevent plant from sinking into the gravels and mud. The temporary surface will likely involve a layer of geotextile matting followed by a solid surface such as sheet piles laid down flat and/or a layer (c.0.3m) of compacted aggregate to act as a roadway for plant.

The total area of foreshore between the existing sea wall and the seaward extent of the 20 metre site boundary / working area within Frontages 3, 4 and 5 is 0.57 ha and this represents the worst case (maximum) area of potential temporary intertidal habitat disturbance. The majority of this area (0.40 ha) is comprised of coastal shingle (B2) and littoral coarse sediment (A2.1) habitat types within the upper shore / existing vehicular access route area (as shown in **Figure 4.5** below). The remainder of this area (0.17 ha), more seaward, includes fragments of *Spartina anglica* saltmarsh communities within intertidal mudflat (A2.3) habitat.



COPYRIGHTS: Aerial Photography [2022]: Image Courtesy of Channel Coastal Observatory

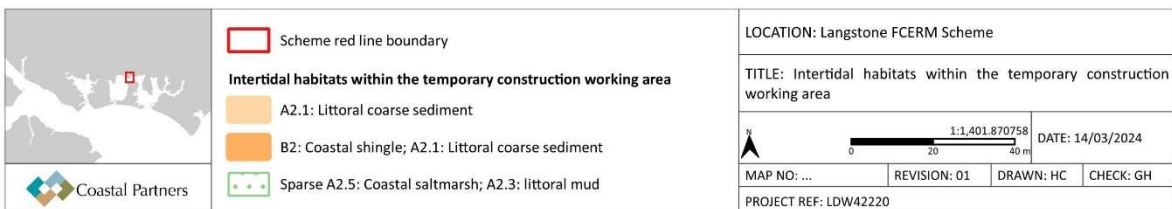


Figure 4.5: Intertidal habitat types within the foreshore working area in Frontages 3, 4 and 5.

Saltmarsh habitat has a high sensitivity to abrasion / disturbance (but still classified as ‘low’ sensitivity within the MarLIN assessment approach) as it can take up to five years to recover following disturbance (MarLIN, 2024). *Spartina anglica* is also considered an irreplaceable habitat under the recent Biodiversity Net Gain Regulations. Consequently **Chapter 8 of the ES (Marine Ecology)** assessed the overall, temporary disturbance of saltmarsh during the construction phase, without mitigation as moderate adverse significance.

Consequently, the following mitigation measures / construction methodology requirements are proposed to be included within the CEMP for the works to minimise disturbance impacts on the intertidal habitats including saltmarsh as far as possible.

Mitigation
• Works will be undertaken from the landward side wherever possible to minimise disturbance of the foreshore. • Where foreshore working is required, this will be restricted to a maximum of 20 metres seawards of the existing defences. The seaward limit of the intertidal works area will be marked by the silt curtain to limit the extent of foreshore disturbance. • The silt curtain and temporary working area boundary will be set out to ensure that areas of <i>Spartina</i> swards are protected and excluded from the haul route / working areas to ensure this habitat is not damaged during the works. • Where access is required on the foreshore, removable temporary haul routes will be installed (e.g., geotextile with sheet piles laid flat or aggregate on top) to minimise disturbance to the intertidal habitat. This will be carefully removed as soon as access is no longer required. Methods will be finalised once a contractor has been appointed and will be confirmed within the CEMP and Biodiversity Mitigation and Enhancement Plan (BMEP). These will lead to a reduced or negligible impact on foreshore stability and accelerated recovery upon reinstatement. • The area excavated for construction of the buried apron of the new sea walls will be reinstated to existing foreshore levels using material retained from the excavation and stockpiled adjacent to the working area within the silt curtain, which will be replaced back over the new apron once it has been constructed. The foreshore material will be placed back over the new sea wall apron in the reverse order to that in which it was excavated to ensure that the sediment layers are returned in the order they were prior to the works. Methods will be finalised once a contractor has been appointed and confirmed within the CEMP and BMEP.

With the mitigation measures outlined above, the impact on saltmarsh from temporary disturbance during the construction works is expected to be of minor adverse significance.

Opportunities for intertidal habitat creation and/or improvement to offset the footprint losses have been considered as part of the detailed design work but are extremely limited within the proposed Scheme area given the very linear and narrow nature of the Scheme and the Conservation Areas / Listed Building heritage requirements and constraints on cladding and finishes. Given that there are no opportunities to offset within the Scheme area, the footprint intertidal habitat losses from the proposed Scheme will be added to the SSD HCRP. This is described further within the Information for HRA (**Appendix C of the ES**). This will ensure

that the losses are offset and there will be a negligible significance impact overall. Consequently the proposed works are not expected to lead to a deterioration of the assessed biological (habitat) elements within the Langstone or Chichester Harbour transitional water bodies, nor prevent this water body from meeting its WFD objectives.

4.4.3 Biology, Fish

During the construction of the proposed Scheme, there is the potential for underwater noise, particularly from piling. No vessels will be used in the construction of the proposed Scheme (all deliveries will be via road) and as such, there will be no impacts / sources of underwater noise from boat engines.

A detailed assessment of underwater noise has been undertaken within the **ES, Chapter 8 (Marine Ecology)**. Marine piling activities are recognised to generate an impulsive sound wave that has greater potential to cause physical injury. Activities which may create underwater sound have the potential to affect fish, and migratory species in particular, depending on their sensitivity to sound and the level of sound created. Sound travels much faster in water (approximately 1,500 m/s) than in air (340 m/s). Since water is a relatively incompressible, dense medium, the pressures associated with underwater sound tend to be much higher than in air.

Sound levels produced by piling can vary in relation to numerous factors including the pile type and diameter/size, hammer size, substrate type and piling installation method (Popper et al., 2014). **Table 4.2** below summarises the types and lengths of sheet piles proposed within the Scheme design. It is expected that the marine piles for the proposed Scheme will be able to be installed using a Movax vibrating piling hammer attached to a 35-tonne excavator working from the foreshore. However, other piling techniques may be required, for example where ground conditions mean that vibro piling is not possible or where it is necessary to minimise vibration levels on nearby heritage assets such as the Listed Buildings and/or residential properties.

Table 4.2: Summary of sheet pile types and lengths to be used within the proposed Scheme.

Frontage / Location	Marine or Terrestrial Piling?	Pile Type	Pile Length (metres)	Anticipated Duration of Piling Works
Frontage 1A	N/A – no piling in this frontage			
Frontage 2 – northern section	Terrestrial	PU12	3.0	15 days
Frontage 2 – central section	Terrestrial	PU12	5.5	
Frontage 2 – southern section	Terrestrial	PU12	3.5	
Frontage 3 – A3023 wall	Terrestrial	L8 trench sheets	2.0	4 days
Frontage 3 – Ship Inn flood wall	Marine	PU28	6.38	5 days
Frontage 3 – Ship Inn Annex wall	Marine	PU28	3.8	2 days

Frontage / Location	Marine or Terrestrial Piling?	Pile Type	Pile Length (metres)	Anticipated Duration of Piling Works
Frontage 4 – Watchtower to Winklemarket	Marine	PU12	2.5	20 days
Frontage 5 – High Street	Marine	PU12	2.05	3 days
Frontage 5 – Royal Oak sea wall	Marine	PU12	1.2 to 1.8	10 days
Frontage 5 – Allotment flood wall	Terrestrial	L8 trench sheets	2.1	2 days
Frontage 5 – No.21 vehicle flood gate	Terrestrial	L8 trench sheets	1.65	1 day
Frontage 5 – Footpath flood wall	Terrestrial	L8 trench sheets	0.82	7 days

Possible effects on fish include behavioural disturbance (including displacement), auditory injury (temporary or permanent) and, in extreme cases, physical traumatic injury and fatality if the fish is very close to the pile driving activity. Marine piling also has the potential to generate underwater noise that could create a barrier across the narrow channel between Chichester and Langstone Harbours, between Hayling Island and the mainland at Langstone. If it extends across the whole channel at important times of the year, this could block the movement of migratory fish and their young that may pass through this channel on their way to and from spawning and nursery habitat in e.g., the Langbrook and Lymbrook Streams.

The hearing sensitivity of fish depends upon whether they have and employ a swim bladder as a functional part of their hearing mechanism. Species for which the swim bladder is an integral part of hearing are most at risk of permanent hearing damage if the swim bladder is ruptured through excessive impulsive sound pressure, but those where no swim bladder exists or where it exists but does not play a main part in hearing are less prone to permanent hearing damage from impulsive sounds.

However, piling for the proposed Scheme will not be directly coupled to the water as it will be undertaken in the dry (when the surface of the substrate is above the current tide level). Sheet piles for the new defence structures in Frontages 3, 4 and 5 will be driven close to the toe of the existing wall on the seaward side. Construction will be carried out over the low tide period; therefore, piling will not take place directly within the water body.

Whilst there may be a vibration transmission path through the ground and seabed, the sound radiated into the water will not be expected to be of a significant level. It is therefore considered that the noise propagated will not be transmitted into the water body at sufficient levels to cause disturbance to fish present in the area.

With the implementation of the mitigation measures outlined below, the pathway of transmission from the source (piling) to the receptor (fish) will be removed as piling will not take place within the water bodies. Consequently the proposed works will not lead to a deterioration of the assessed biology elements, specifically fish within the Langstone or Chichester Harbour transitional water body, nor prevent this water body from meeting its WFD objectives.

Mitigation

- To avoid the transmission of impulsive noise into the water column, piling on the foreshore will only be undertaken in the dry (when the surface of the substrate is above the current tide level), with methods to be agreed and included as part of the CEMP once a contractor has been appointed.
- Installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes to encourage any fish present to move away from the area. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated once piling is recommenced.

Water Quality

Chichester Harbour water body has no history of harmful algae, however Langstone Harbour does. Water bodies with a history of harmful algae are those identified from the monitoring results of the Food Standard Agency's (FSA) official control biotoxin monitoring (live bivalve molluscs) programme in England. The water body has been assessed as having a history of harmful algae based on whether the FSA's action levels have been exceeded in three or more calendar years from 2009 to 2015. However, the proposed works do not include any requirements for the introduction of sediment or release of any chemical substances into the marine environment. In addition, the potential for contaminated land to be disturbed during construction is considered low based on analysis of a number of geo-environmental samples collected during outline design (see Section 4.2 of the ESR) suggesting no potential for significant direct or indirect effects on water quality.

Works on the foreshore could take over 14 days and could therefore affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle for both Chichester Harbour and Langstone Harbour waterbodies. There is potential for accidental spills/leaks from plant and machinery to impact on the water quality, including harmful algae during the proposed works. However, this will be managed through best practice within the CEMP to minimise the risk, such as 'Guidance for Pollution Prevention: Works and maintenance in or near water: GPP 5'¹. Consequently, there will be no effects on algae.

In conclusion, following best practice measures, the proposed works will not lead to a deterioration of the assessed water quality elements within the Langstone or Chichester Harbour transitional water body, nor prevent this water body from meeting its WFD objectives.

4.4.4 Protected areas

The scheme is within 2 km of the following protected areas:

- Solent Maritime SAC
- Chichester and Langstone Harbours SPA and Ramsar

1

https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf?utm_source=website&utm_medium=social&utm_campaign=GPP5%2027112017 (Last accessed October 2020)

- Langstone Harbour Shellfish Waters
- Emsworth Channel Shellfish Waters

4.4.4.1 *National Site Networks*

A HRA has been prepared to support this application. This includes screening of the scheme activities and potential effect pathways, and assessment of whether the proposed scheme will have an adverse effect on the integrity of the relevant National Site Networks. Where potentially significant adverse effects were identified, mitigation measures have been proposed to ensure the protection of the designated site features. The appropriate assessments indicate that, providing the proposed mitigation measures are secured, the construction phase of the Langstone FCERM Scheme will not have an adverse effect on the attributes of the Solent Maritime SAC or the Chichester and Langstone Harbours SPA and Ramsar site. During the construction works, the incorporated mitigation measures will prevent disturbance of SPA/Ramsar birds and ensure that the water quality and habitats within the harbours are not adversely affected.

However, in the operational phase, the permanent loss of intertidal habitat under the footprint of the new sea wall structures (172m²), and from coastal squeeze over the lifetime of the scheme, will result in an adverse effect on the extent and distribution attribute of the sites' conservation objectives for the Estuaries, Mudflats and Sandflats not covered by seawater at low tide, Salicornia and other annuals colonising mud and sand, Atlantic salt meadows and Spartina swards SAC features and the intertidal sediment and saltmarsh SPA/Ramsar supporting habitats. As detailed in the HRA, (**Appendix C of the ES**), the North Solent SMP and the Portchester to Emsworth Coastal Strategy (PEMS) have already been through the HRA process and the derogation tests and consequently the Secretary of State has already approved the plan and the decision to have a coastal defence at this location (i.e. to Hold the Line). Additionally, the Environment Agency's Habitat Compensation and Restoration Programme (HCRP) has already been approved by the Secretary of State as the agreed compensatory mechanism for habitat losses caused by coastal squeeze due to the HTL policies within the North Solent SMP and the PEMS.

Therefore, as the Langstone FCERM Scheme is implementing the SMP and strategic policy, it follows that any unforeseen and unavoidable additional compensatory requirements arising at the scheme level can be included within this compensatory mechanism to ensure the overall ecological coherence of the designated site. Consequently the proposed works are not expected to lead to a deterioration of the protected area designations, nor prevent the water bodies from meeting their WFD objectives.

4.4.4.2 *Shellfish Waters*

Any effects subsequently arising from resuspension of sediment are expected to be highly localised and well within natural variability of the system and current background conditions. The proposed works do not include any requirements for the introduction of sediment or release of any chemical substances into the marine environment. There is potential for accidental spills/leaks from plant to impact on the water quality during the proposed works. However, this will be managed through best practice within the CEMP to minimise the risk. Overall, no effects are anticipated on Langstone Harbour or Emsworth Channel shellfish Waters. Consequently the proposed works are not expected to lead to a deterioration of the protected area designations, nor prevent the water bodies from meeting their WFD objectives.

4.4.5 Relevant activities

To support this impact assessment, the JNCC Pressures Activities Database (JNCC, 2018) has been interrogated to identify activities from the construction or operation of the Langstone FCERM scheme that could impact receptors that have been scoped in. The following activities have been identified from this matrix within the Coastal Infrastructure category:

- Coastal flood and erosion risk management schemes: Construction;
- Piling: Coastal flood and erosion risk management schemes;
- Reclaim and land take (e.g., the footprint of coastal defences);
- Coastal flood and erosion risk management schemes: Operation;
- Hard coastal defences: Maintenance;
- Slipway: Maintenance and construction;

4.4.6 Relevant pressures

Each of the above activities result in pressures. Pressures are defined as mechanisms through which an activity can impact any part of an ecosystem. This impact assessment has therefore identified all potential pressures that could result from the above activities (extracted from the JNCC Pressures-Activities Database) and could have an impact on the scoped in water bodies and receptors. Whilst the database included 112 pressures, only those that are relevant to the activities within our scheme have been considered (summarised in **Table 4.3**), forming the basis of this impact assessment. These pressures have been grouped into five pressure categories, to simplify the impact assessment.

Table 4.3: Pressures identified from the JNCC Pressures Activities Database that form the basis of this Stage 3 impact assessment of the Langstone scheme

Pressure category	Pressures assessed (from JNCC Pressures Activities Database)
A	Above ground noise Visual disturbance Barrier to species movement (above ground only)
B	Abrasion / disturbance of substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.
C	Changes to suspended solids (water clarity) Deoxygenation Smothering and siltation rate changes (heavy and light)
D	Physical Changes (to another seabed / sediment type) Physical loss (to land or freshwater) Habitat structure changes - removal of substratum (extraction)

E	Underwater noise changes Vibration Barrier to species movement (underwater only)

Table 4.4 summarises pressures from the JNCC Pressures Activities Database that are NOT considered relevant to the scheme (i.e., they do not have a potential pathway or are of such low risk of occurring that the pressure has been discounted from further assessment).

Table 4.4: Low risk pressures screened out of further assessment

Pressure not assessed (from JNCC Pressures Activities Database)	Justification
Collision ABOVE water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	There will be no deliveries by sea; all materials and equipment will come via road so there is no risk of collisions between vessels and SPA/Ramsar birds. The new sea defences will be in approximately the same location as existing structures and buildings so are not likely to affect the foraging activities or flight paths of SPA/Ramsar birds. No new aerial structures are proposed that could introduce a collision risk for SPA/Ramsar birds. As such, the benchmark for the above water pressure is not triggered and the below water benchmark of a change of 0.1% of tidal volume on average tide, passing through an artificial structure, is not relevant to the proposed Scheme. No case specific factors have been identified that would increase the risk of these pressures for the Langstone FCERM scheme.
Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	
Introduction of light	Construction activities for the proposed Scheme will generally be undertaken during daytime hours (7am to 7pm). However, due to the complexities of the project, occasional 24-hour working may be necessary. Nonetheless, any lighting that is required for construction or maintenance activities is not likely to have a significant effect on the foraging or roosting activities of SPA/Ramsar birds or on the intertidal habitats in the harbour as the lighting would be highly localised and directed towards the defences/footpath working area. Lighting requirements for the operational scheme will be similar to existing levels and locations. No case specific factors have been identified that would increase the risk of this pressure for the Langstone FCERM scheme.
Introduction of other substances (solid, liquid or gas)	Best practice will be in place for construction site management and maintenance activities, which will minimise the risk of any spills from materials, equipment or re-fuelling activities. Spill kits will be kept on site for use in case of any accidental spillage. All materials to be used in the construction and maintenance of the new sea defences are suitable for use in the marine environment. No case specific factors have been identified that would increase the risk of this pressure for the scheme.
Introduction or spread of invasive non-indigenous species (INNS)	Best practice will be in place for construction site management and maintenance activities, which will minimise the risk of introduction or spread of INNS. This is included as standard in the CEMP for all projects. Any vessels used for the delivery of materials to site will adhere to industry legislation, codes of conduct and/or best practice to minimise the risk of introduction or spread of INNS. No case specific factors have been identified that would increase the risk of this pressure for the scheme.
Litter	Best practice will be in place for construction site management and maintenance activities, which will minimise the risk of introducing litter to the marine environment. This will include suitable waste management and storage facilities, which is included as standard in the CEMP for projects. No case specific factors have been identified that would increase the risk of this pressure for the scheme.
Nutrient enrichment	The works do not involve any significant changes to outfalls/discharges, or any dredging works so no new sources/pathways of nutrient enrichment or organic enrichment are anticipated as part of the works or operation of the new defences. No case specific factors have been identified that would increase the risk of this pressure for the scheme.
Organic Enrichment	

Pressure not assessed (from JNCC Pressures Activities Database)	Justification
Salinity decrease; Salinity increase	The new sea defences will not result in any changes to sea water intrusion to the harbour and no changes are proposed to the catchment area of outfalls that could affect the salinity of the designated habitats on the seaward side of the defences or of the SPA/Ramsar supporting habitats on the landward side of the defences. As such, there is no potential for changes to saline and freshwater inputs to the harbour and landward supporting habitats. No case specific factors have been identified that would increase the risk of this pressure for the Langstone FCERM scheme.
Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	Foreshore sediment samples analysed from within and adjacent to the footprint of the proposed Scheme were all found to be relatively uncontaminated by heavy metals, transition elements and organotins, with the majority of analytes being below the Interim Sediment Quality Guideline (ISQG) Threshold Effect Level (TEL) and no results exceeding the Probable Effects Level (PEL) or Cefas Action Level 2 (see Section 4.3 Marine Water and Sediment Quality of the EIA Scoping Report (Appendix A2 of the ES)). The results of the Geotechnical Investigation (GI) also indicate that levels of heavy metals in all the samples tested from the landward side of the proposed works area were below limits of detection or within the thresholds for re-use of material suitable for Parks, Open Amenity Space (see Section 4.2 Land Quality and Hydrology of the ESR (Appendix A2 of the ES)). Therefore, the risk of remobilisation of heavy metal /organotin contaminated sediments from excavation of the foreshore and piling for the new sea wall is considered to be very low. All excavations during the construction works will be undertaken in accordance with the CEMP and Contaminated Land Strategy (Appendix P of the ES) as is standard practice for all Coastal Partners projects. No case specific factors have been identified that would increase the risk of this pressure for the Langstone FCERM scheme.
Transition elements & organo-metal (e.g. TBT) contamination	
Wave Exposure	The proposed scheme will not result in any changes to the wave climate within Langstone Harbour or Chichester Harbour as the frontage is located in a sheltered, low wave climate area at the top of the harbours and there are no cross shore structures proposed as part of the scheme.
Water flow (tidal current) changes, including sediment transport considerations	No new cross-shore structures are proposed as part of the Scheme. The new defences will follow the existing alignment, albeit slightly seawards where encasement or sheet piles are required to ensure the stability of existing/new structures as part of the design. As detailed in Section 4.4 of the ESR and the Coastal Processes Report in Appendix G , changes to physical process as a result of the proposed work are anticipated to be negligible in the context of background conditions and were scoped out of further assessment.
Emergence regime changes, including tidal level change considerations	The proposed scheme does not involve dredging and it will not result in any changes to the tidal regime, water levels or the tidal prism within Langstone Harbour or Chichester Harbour. Changes to physical process as a result of the proposed work are anticipated to be negligible in the context of background conditions and were scoped out of further assessment.

4.4.7 Impact assessment tables

Table 4.5 to Table 4.9 present the impact assessments for the Langstone and Chichester Harbour water body scoped into the Stage 3 assessment, split by the pressure categories listed in **Table 4.3**. Each table summarises the activities we will be undertaking, the pressures they result in and the receptors that could be impacted by them. It then discusses the relationships between these, to confirm whether there is potential to impact the status of the Langstone Harbour and Chichester Harbour water bodies. Mitigation measures are then promoted to reduce the impact where necessary. This enables a conclusion as to whether there is any resultant impact from our activities that could cause deterioration of the water body status or jeopardise the water body from achieving good status. As discussed in **Section 6.2**, any impacts identified for Langstone and Chichester Harbour water bodies may also apply to Langstone Oysterbeds water body, but to a lesser extent if an unacceptable impact is identified,

This impact assessment has been carried out by assessing impacts to the Langstone and Chichester Harbour water body, alone and then in combination. The impact on the National Site Networks is considered in detail within the HRA (**Appendix C1 of the ES**), which should be read in conjunction with this WFD assessment.

The South East RBMP also sets out specific mitigation measures for the Langstone and Chichester Harbour water bodies. Following the impact assessment tables, additional consideration has been given to any measures that the scheme could potentially deliver and that could contribute towards achieving water body objectives. These are summarised in **Section 6**.

A conclusion has then been made to demonstrate whether the scheme is considered Water Framework Directive compliant.

Table 4.5: WFD Impact Assessment on pressure category A - above ground disturbance

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
Coastal flood and erosion risk management schemes: • Construction • Piling	Above ground noise; Visual disturbance; Barrier to species movement (above ground only).	Protected areas: • SPA • Ramsar	<u>Above ground noise</u> Noise from site clearance, construction and maintenance activities, e.g., breaking out of existing structures, piling activities and from the use of heavy machinery, has the potential to cause disturbance to SPA/Ramsar birds, which could result in a temporary loss of feeding, roosting and/or nesting habitat (through displacement of birds), a reduction in feeding time (whilst alert or moving away from the source of disturbance), as well as an increase in energy expenditure if they take flight as a result of the disturbance. This could affect the energy budgets, body condition and/or breeding success of individual birds, and potentially, if severe, could affect the viability of the populations of the SPA/Ramsar species using the site. Section 10.4 of the ES (Ornithology) describes the important feeding, roosting and nesting locations for SPA/Ramsar birds near to the Langstone frontage. Non-breeding SPA/Ramsar birds As described in Section 10.6.1 of the ES (Ornithology), use of a wacker plate in frontage 1A is likely to generate a 69dB noise contour approximately 120m into the SPA/Ramsar site on the seaward side of the works (Figure 10.9 in the ES). In Frontage 2, vibro piling and use of construction machinery will likely generate a noise contour of 69dB approximately 70m into the SPA/Ramsar on the seaward side (Figure 10.10 in the ES). In Frontage 3, vibro piling will likely generate a noise contour of 69dB approximately 100m and percussive piling of approximately 300m into the SPA/Ramsar on the seaward side (Figure 10.11 in the ES). In Frontage 4, vibro piling will likely generate a 69dB noise contour approximately 75m and percussive piling of approximately 320m into the SPA/Ramsar site on the seaward side of the works (Figure 10.12 in the ES). Other construction work noise impacts in Frontage 4 (use of plant such as excavators and the delivery of materials) will likely generate a noise contour of 69dB approximately 90-100m into the SPA/Ramsar site on the seaward side of the works. In Frontage 5, vibro piling will likely generate a 69dB noise contour approximately 75m and percussive piling of approximately 400m into the SPA/Ramsar site on the seaward side of the works (Figure 10.13 in the ES). The use of a wacker plate 69dB noise contour will encroach up to 140m (Figure 10.13 in the ES) and other construction noise impacts (e.g., plant movements) up to 60m into SPA/Ramsar site on the seaward side of the works. In Frontage 5 noise levels above 69dB will encroach into Solent Wader Brent Goose Strategy (SWBGS) site H126 and Solent Bird Study (SBS) sites H120 and H26, used as functionally linked land by non-breeding waterbirds. Breeding SPA birds: The 69dB noise contour for percussive piling will encroach approximately 300-400 metres into the SPA site. As the nearest tern nesting grounds at the Oysterbeds on Hayling Island in Langstone Harbour are 1.3km away from the construction works, the nesting sites will not be adversely affected by airborne noise. However, breeding terns forage for food across the whole of Langstone and Chichester Harbours and therefore piling and construction work noise impacts could have a minor adverse effect on their foraging activity. However, due to the profile of the shore adjacent to the Langstone FCERM Scheme frontage, there is only a short period around high tide when the area of influence will be covered by water, and therefore for most of the tidal frame it will not be deep enough to be suitable for foraging terns. <u>Visual disturbance</u> As described in Section 10.6.2 of the ES (Ornithology), the presence and movement of machinery and personnel during the construction and maintenance of the new defences particularly in Frontages 3, 4 and 5 has the potential to cause visual disturbance (in combination with noise impacts) to SPA/Ramsar non-breeding birds feeding at low tide on the adjacent intertidal sediment and/or feeding or roosting on the landward functionally linked grassland SWBGS site (H126) and SBS sites (H26, H120) adjacent to the works. This disturbance could result in a temporary loss of feeding and/or roosting habitat (through displacement of birds), a	Yes	<u>Above ground noise</u> To reduce above ground noise impacts on non-breeding SPA/Ramsar birds, the following seasonal timing restrictions will be incorporated for sensitive bird locations and will be included in the CEMP: • In Frontage 1A, a wacker plate or compacting plant with a similar noise profile will not be used between CH120-188 during the overwintering bird period October to March inclusive. • In Frontage 2, no construction work to be undertaken during the overwintering bird period October to March inclusive. • In Frontage 3, piling work will not be undertaken during the overwintering bird period October to March inclusive. Furthermore, no construction work will be undertaken on the harbourside stretch of this frontage at the Ship Inn and Annex (CH100-152) during the overwintering bird period, October to March inclusive. • In Frontage 4, no construction work to be undertaken during the overwintering bird period October to March inclusive. • In Frontage 5, no construction work to be undertaken between CH0-95 or piling / trench sheet installation work between CH96-185 during the overwintering bird period October to March inclusive. To minimise risk of disturbance to the egret and heron roost, no night working, and particularly no artificial lighting, should be used between CH112-221. For all frontages, installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated once piling is recommenced. Piling methods will be agreed and included as part of the final CEMP once a contractor has been appointed. In addition, for any work proposed within the over-wintering bird period, October to	No

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
			reduction in feeding time (whilst alert or moving away from the source of disturbance), as well as an increase in energy expenditure if they take flight as a result of the disturbance. This could affect the energy budgets and body condition of individual birds, and potentially, if severe, could affect the viability of the populations of the SPA/Ramsar species using the site. The nearest tern breeding colony is located at the Oysterbeds on Hayling Island in Langstone Harbour, which is approximately 1.3km away from the proposed Scheme frontage, therefore the nesting sites will not be adversely affected by visual disturbance. Foraging seabirds associated with this breeding colony do use this area, however, it is considered that the partly commensal habits of these tern species make them less likely to be susceptible to visual disturbance whilst foraging. The low sensitivity of foraging terns to visual disturbance is also referenced in the Conservation Advice on Operations (AoO) for the site (Natural England, 2023b). Therefore, no specific mitigation is considered necessary for this impact pathway and foraging SPA terns. <u>Barrier to species movement (above ground only).</u> The benchmark for this pressure is defined as disruption to >10% of the local population of a migratory feature affected by permanent or temporary lack of continuity of parts of the commuting or migration corridor causing complete obstruction or an increase in travel distance around barriers to species movement. The maximum height of the proposed new defences is +3.8m Ordnance Datum Newlyn (ODN), and the new defences will be in front of existing buildings or raising existing pathways. No artificial structures that could block or significantly alter bird migration routes or local flight passes will be constructed as part of the proposed works. The local movements of SPA/Ramsar non-breeding birds between intertidal feeding areas within the site boundary and the landward functionally linked SWBGS / SBS roosting sites could be temporarily altered during construction works due to noise and visual disturbance from piling and the presence of heavy machinery and personnel, but this is not likely to exceed the 10% population benchmark for this pressure.		March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be included within the final CEMP. In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw), an expert review will be undertaken by the project ecologist and, if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced all works will cease during the suspension period. Details of this process will be laid out within the final CEMP. During the SPA seabird breeding season (April to August), piling on the foreshore will only be undertaken in the dry (when the surface of the substrate is above the current tide level) and when water column supporting habitat is therefore not available for foraging terns due to tidal conditions. Visual disturbance to avoid visual disturbance on overwintering birds in Frontage 4, no construction works will be undertaken during the overwintering bird period (October to March inclusive). To reduce visual disturbance on overwintering birds in Frontages 3 and 5, no construction work will be undertaken on the harbourside sections (i.e., Frontage 3 chainage 100-152 and Frontage 5 chainage 0-110) during the overwintering bird period (October to March inclusive). In addition, for all frontages, for any work proposed within the over-wintering bird	

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
					period, October to March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of screening barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be included within the final CEMP. In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw) an expert review will be undertaken by the project ecologist and if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced all works will cease during the suspension period. Details of this process will be laid out within the final CEMP. <u>Barrier to species movement (above ground only).</u> the mitigation measures incorporated to avoid noise and visual disturbance of non-breeding SPA/Ramsar birds will ensure that the construction works do not cause a temporary barrier to local movements of over-wintering birds between the harbour and landward functionally linked sites.	
Reclaim and land take (e.g. the footprint of the coastal defences)	Above ground noise; Visual disturbance; Barrier to species movement (above ground only).	Protected areas: • SPA • Ramsar • SAC	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No
Coastal flood and erosion risk management schemes: Operation	Above ground noise; Visual disturbance;	N/A	No impacts identified for any pressures.	No	No mitigation required, as no potential impact	No

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
	Barrier to species movement (above ground only).					
Hard coastal defences: Maintenance	Above ground noise; Visual disturbance; Barrier to species movement (above ground only).	Protected areas: • SPA • Ramsar	This FCERM scheme is being constructed to minimise maintenance activities over the next 50 years (scheme design life). Should small scale maintenance be required, its impacts will not be over and above those already assessed for construction (as identified above).	No	As per mitigation for construction activities	No
Slipway: Maintenance and construction	Above ground noise; Visual disturbance; Barrier to species movement (above ground only).	Protected areas: • SPA • Ramsar	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction, and Piling above relates to this activity also, therefore the text has not been repeated here.	No

Table 4.6: WFD Impact Assessment on pressure category B – disturbance of the foreshore and seabed

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
Coastal flood and erosion risk management schemes: • Construction • Piling	Abrasion / disturbance of substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	Biology: Habitats Protected areas: • SPA / Ramsar • SAC	<u>Abrasion / disturbance of substrate on the surface of the seabed</u> As described in Section 8.6.1 of the ES (Marine Ecology) and Section 10.6.3 of the ES (Ornithology), 0.57 ha of foreshore within Frontages 3, 4 and 5 within the SPA/Ramsar site has the potential to be temporarily disturbed during the construction works and will, therefore, be unavailable as supporting habitat for SPA/Ramsar birds during construction. The habitat affected is comprised of 0.4ha of coastal shingle (B2) and littoral coarse sediment (A2.1) habitat types within the upper shore and 0.17ha of fragments of <i>Spartina anglica</i> saltmarsh communities within intertidal mudflat (A2.3) habitat. Therefore, the majority of the habitat that will be temporarily affected is shingle and coarse sediment, which is not especially valuable foraging habitat for most waders. Data from the overwintering bird surveys in 2020/21 and 2021/22 indicates that of birds observed within 500m of the proposed new defences that only 4% of SPA assemblage species were observed within 25m of the proposed alignment, which constitutes 332 birds across the entire survey series and an average of 34 birds per survey (0.09% of the Chichester Harbour 5-year average assemblage). There will also be a period following completion of the construction works that the foreshore habitat will take to recover and re-establish its interest to foraging birds before the intertidal communities return to their pre-works condition. The duration of this recovery period is difficult to predict but following the completion of Phases 1 to 4b of the nearby North Portsea Island (NPI) scheme, birds were observed feeding alongside the completed defence in the winter following the completion of the works. <u>Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion</u> In addition to the disturbance of substrate on the surface of the seabed as discussed above, there will be some disturbance of the substrate below. However, no additional disturbance	Yes	<u>Abrasion / disturbance of substrate on the surface of the seabed</u> As much of the construction works as possible will be carried out from the landward side to minimise disturbance of the foreshore. Where foreshore working is required, this will be restricted to a maximum of 20 metres seawards of the existing defences. The seaward limit of the intertidal works area will be marked by the silt curtain to limit the extent of foreshore disturbance. The silt curtain and temporary working area boundary will be set out to ensure that areas of <i>Spartina</i> swards are protected and excluded from the haul route / working areas to ensure this habitat is not damaged during the works. Where access is required on the foreshore, removable temporary haul routes will be installed (e.g., geotextile with sheet piles laid flat or aggregate on top) to minimise disturbance to the intertidal habitat and accelerate recovery upon reinstatement. The intertidal habitat disturbed during the construction works will be reinstated over the apron of the new defences to the same topography as existing levels following completion of the new sea wall. The foreshore	No

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
			will occur to habitats and features of protected areas beyond the disturbance already covered by the impact assessment for the surface. <u>Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.</u> several foreshore sediment samples analysed from within and adjacent to the proposed works area during the Ground Investigation had elevated levels of PAHs above Cefas Action Level 1 but below ISQG PEL. In addition, one landward (terrestrial) sample located in Frontage 2 had elevated levels of PAHs with one analyte (Dibenzo[a,h]anthracene) exceeding the ISQG PEL and the LQM/CIEH Suitable 4 Use Level threshold for re-use of material suitable for Public Open Spaces (Parks) SOM1.		material will be placed back over the apron of the new sea wall in the reverse order to that in which it was excavated to ensure that the sediment layers are returned in the order they were prior to the works. This will ensure restoration of conditions suitable for like-for-like redevelopment of intertidal habitats. Methods will be finalised once a contractor has been appointed and confirmed within the final CEMP. <u>Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion</u> The same mitigation outlined above for abrasion /disturbance of substrate on the surface will apply here. <u>Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.</u> All excavations during the construction works will be undertaken in accordance with the CEMP and Contaminated Land Method Statement / Materials Management Plan, as is standard practice for all Coastal Partners' projects. Mitigation measures include undertaking foreshore works in the dry and the use of a silt curtain during the works, will also prevent any contaminants in sediments from reaching the wider harbour in the event that they are present and are remobilised during the works.	
Reclaim and land take (e.g. the footprint of the coastal defences)	Abrasion / disturbance of substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	Biology: Habitats Protected areas: • SPA / Ramsar • SAC	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
Coastal flood and erosion risk management schemes: Operation	Abrasion / disturbance of substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	Biology: Habitats Protected areas: • SPA / Ramsar • SAC	There are unlikely to be any significant changes to water flows or direction that could cause disturbance of the sea bed once the scheme is operational.	No	No mitigation required.	No
Hard coastal defences: Maintenance	Abrasion / disturbance of substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	Biology: Habitats Protected areas: • SPA / Ramsar • SAC	This FCERM scheme is being constructed to minimise maintenance activities over the next 50 years (scheme design life). Should small scale maintenance be required, its impacts will not be over and above those already assessed for construction and piling (as identified above).	No	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No
Slipway: Maintenance and construction	Abrasion / disturbance of substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion	Biology: Habitats Protected areas: • SPA / Ramsar • SAC	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and piling, above relates to this activity also, therefore the text has not been repeated here.	No

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
	Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.					

Table 4.7: WFD Impact Assessment on pressure category C – increases in suspended sediment concentrations and sedimentation

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
Coastal flood and erosion risk management schemes: - Construction - Piling	Changes to suspended solids (water clarity) Deoxygenation Smothering and siltation rate changes (heavy and light)	Biology: Habitats Water Quality Protected areas: - Shellfish Waters - SPA / Ramsar - SAC	Excavation and disturbance of intertidal sediments will occur during the construction of the new sea defences, which has the potential to result in increased suspended sediment concentrations and associated deoxygenation and siltation/smothering of habitats within the harbours. Reduced photosynthetic / feeding rates causes reduced growth rates, which, if prolonged, may lead to a reduction in the extent of habitats and/or their component communities and a change to their distribution within the site. Saltmarsh and seagrass beds are particularly sensitive to increases in suspended sediments and siltation due to the associated reduction in light levels and smothering, which affects the ability of plants to photosynthesize.	Yes	Works will be undertaken from the landward side wherever possible to minimise disturbance of the foreshore. Excavation and piling on the foreshore will only be undertaken over the low tide period (when the foreshore is exposed) to minimise mobilisation of sediments into the water column. A silt curtain will be installed prior to the commencement of any works on the intertidal area to fully contain the current working area and to protect the sensitive habitats in the harbour, including the sensitive seagrass beds. The silt curtain will be maintained for the duration of construction works on the foreshore, and any failures in the silt curtain will be reported to the sub-contractor and repaired as soon as feasible.	No
Reclaim and land take (e.g. the footprint of the coastal defences)	Changes to suspended solids (water clarity) Deoxygenation Smothering and siltation rate changes (heavy and light)	Biology: Habitats Water Quality Protected areas: - Shellfish Waters - SPA / Ramsar - SAC	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No
Coastal flood and erosion risk management schemes: Operation	Changes to suspended solids (water clarity) Deoxygenation Smothering and siltation rate	Biology: Habitats Water Quality Protected areas: - Shellfish Waters - SPA / Ramsar - SAC	No impacts identified for any pressures.	No	No mitigation required.	No

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
	changes (heavy and light)					
Hard coastal defences: Maintenance	Changes to suspended solids (water clarity) Deoxygenation Smothering and siltation rate changes (heavy and light)	Biology: Habitats Water Quality Protected areas: • Shellfish Waters • SPA / Ramsar • SAC	This FCERM scheme is being constructed to minimise maintenance activities over the next 50 years (scheme design life). Should small scale maintenance be required, its impacts will not be over and above those already assessed for construction and piling (as identified above).	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No
Slipway: Maintenance and construction	Changes to suspended solids (water clarity) Deoxygenation Smothering and siltation rate changes (heavy and light)	Biology: Habitats Water Quality Protected areas: • Shellfish Waters • SPA / Ramsar • SAC	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No

Table 4.8: WFD Impact Assessment on pressure category D – habitat loss and hydrodynamic changes

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
Coastal flood and erosion risk management schemes: • Construction • Piling	Physical Changes (to another seabed / sediment type) Physical loss (to land or freshwater) Habitat structure changes - removal of substratum (extraction)	Hydro-morphology Biology: Habitats Protected areas: • SPA / Ramsar • SAC	The new sea defences in Frontages 3, 4 and 5 will result in the permanent loss of a narrow ribbon of intertidal sediment SAC habitat in front of Langstone Village, which will be changed to steel piles and concrete under the footprint of the new defence structures. Loss of intertidal habitats due to coastal squeeze over the lifetime of the Scheme will occur from the implementation of the 'Hold the Line' policy at the Langstone frontage. This loss has been assessed at both the SMP and Strategy level and compensation via the Solent and South Downs Habitat Compensation and Restoration Programme (HCRP) has been approved by the Secretary of State. The 172m² permanent loss of intertidal sediment within the SAC under the footprint of the new defences, together with the coastal squeeze losses from implementation of the HTL policy, will result in an adverse effect on the SAC intertidal habitat features and their sub-features, which cannot be mitigated under the Habitat Regulations in accordance with the Briels and Orleans CJEU rulings (C – 521/12, C – 387/15 and C – 388/15). The intertidal sediment loss comprises of coastal shingle (B2) and littoral coarse sediment (A2.1) habitat types within the upper shore which are considered a lower sensitivity WFD habitat. However the total loss is 0.0001% of lower sensitivity habitat so substantially below the 1% WFD threshold.	Yes	The area of permanent habitat loss that will arise from the proposed Scheme has been minimised as far as technically feasible, as described in Chapter 4 (Alternatives) and the Detailed Design Report (AECOM, 2024a). The proposed design for the new sea walls in Frontages 3, 4 and 5, with a buried apron, has significantly reduced the area of permanent habitat loss as far as is technically feasible. Opportunities for intertidal habitat creation and/or improvement to offset the footprint losses have been considered as part of the detailed design work but are extremely limited within the proposed Scheme area given	Yes - there is some minor encroachment of intertidal habitat. The intertidal habitat cannot be mitigated resulting in a minimal residual impact. As detailed in the HRA, habitat creation to offset the permanent loss of intertidal habitat via the HCRP should be considered as a compensatory measure later in the HRA process. Overall considering the small scale of loss of intertidal habitat in the context of the WFD water bodies the proposed Langstone

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
					the very linear and narrow nature of the Scheme and the Conservation Areas / Listed Building heritage requirements and constraints on cladding and finishes. Mitigation is also proposed for saltmarsh and intertidal sediment as detailed in Section 4.4.2 of this report.	scheme is not likely to cause a deterioration in water body status or jeopardise the achievement of water body objectives.
Reclaim and land take (e.g. the footprint of the coastal defences)	Physical Changes (to another seabed / sediment type) Physical loss (to land or freshwater) Habitat structure changes - removal of substratum (extraction)	Hydro-morphology Biology: Habitats Protected areas: • SPA / Ramsar • SAC	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	The residual impact for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.
Coastal flood and erosion risk management schemes: Operation	Physical Changes (to another seabed / sediment type) Physical loss (to land or freshwater) Habitat structure changes - removal of substratum (extraction)	Hydro-morphology Biology: Habitats Protected areas: • SPA / Ramsar • SAC	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	The residual impact for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.
Hard coastal defences: Maintenance	Physical Changes (to another seabed / sediment type) Physical loss (to land or freshwater) Habitat structure changes - removal of substratum (extraction)	Hydro-morphology Biology: Habitats Protected areas: • SPA / Ramsar • SAC	This FCERM scheme is being constructed to minimise maintenance activities over the next 50 years (scheme design life). Should small scale maintenance be required, its impacts will not be over and above those already assessed for construction and piling (as identified above).	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	The residual impact for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.
Slipway: Maintenance and construction	Physical Changes (to another seabed / sediment type) Physical loss (to land or freshwater)	Hydro-morphology Biology: Habitats Protected areas:	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	The residual impact for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
	Habitat structure changes - removal of substratum (extraction)	• SPA / Ramsar • SAC				activity also, therefore the text has not been repeated here.

Table 4.9: WFD Impact Assessment on pressure category E – underwater noise and vibration

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
Coastal flood and erosion risk management schemes: • Construction • Piling	Underwater noise changes Vibration Barrier to species movement (underwater only)	Biology: Fish Protected areas: • SPA / Ramsar	No receptors are identified that are likely to be affected by vibration. However as described in Section 10.6.1 of the ES (Ornithology) marine piling during construction and maintenance of the new sea defences has the potential to generate underwater noise and disturb non-breeding diving ducks during the over-wintering season and foraging terns during the summer season. Underwater noise could result in fatal or sub lethal damage caused by exposure to sound energy, a temporary loss of feeding habitat (through displacement of birds), a reduction in feeding time (whilst moving away from the source of disturbance), a reduction in small fish prey availability in the water column supporting habitat, as well as an increase in energy expenditure if birds take flight as a result of the disturbance. This could affect the energy budgets, body condition and/or breeding success of individual birds, and potentially, if severe, could affect the viability of the populations of the SPA/Ramsar species using the site. However, due to the profile of the shore adjacent to the Langstone FCERM Scheme frontage, there is only a short period around high tide when the works area will be covered by water. As such, the potential for sound to propagate into the water body and generate underwater noise will be limited in duration to a very short period on each tidal cycle.	Yes	To reduce below water noise effects on diving ducks (between October and March) and foraging terns (during the summer months), installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated once piling is recommenced. Furthermore, piling on the foreshore will only be undertaken in the dry (when the surface of the substrate is above the current tide level) to avoid the transmission of noise / sound waves into the water column. This means that piling on the foreshore will only be undertaken when the water column supporting habitat is not available for diving ducks, foraging terns and small fish prey species due to tidal conditions. Piling methods will be agreed and included as part of the final CEMP once a contractor has been appointed. In addition, for any work proposed within the over-wintering bird period, October to March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts (as set out for the above water noise impact above).	No
Reclaim and land take (e.g. the footprint of the coastal defences)	Underwater noise changes Vibration Barrier to species movement (underwater only)	Biology: Fish Protected areas: • SPA / Ramsar	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No
Coastal flood and erosion risk management	Underwater noise changes	Biology: Fish	No impacts identified for any pressures.	No	No mitigation required.	No

Activity	Pressure(s)	Receptor(s)	Impact Assessment	Potential Impact Good / Current Status?	Mitigation – if required to reduce impact identified. If negligible impact or no impact on receptor is identified, mitigation measures have been included as best practice	Residual impact
schemes: Operation	Vibration Barrier to species movement (underwater only)	Protected areas: • SPA / Ramsar				
Hard coastal defences: Maintenance	Underwater noise changes Vibration Barrier to species movement (underwater only)	Biology: Fish Protected areas: • SPA / Ramsar	This FCERM scheme is being constructed to minimise maintenance activities over the next 50 years (scheme design life). Should small scale maintenance be required, its impacts will not be over and above those already assessed for construction and piling (as identified above).	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No
Slipway: Maintenance and construction	Underwater noise changes Vibration Barrier to species movement (underwater only)	Biology: Fish Protected areas: • SPA / Ramsar	The impact assessment for Coastal flood and erosion risk management schemes: Construction and Piling above similarly relates to this activity too, therefore the text has not been repeated here.	Yes	The mitigation for Coastal flood and erosion risk management schemes: Construction and Piling, above relates to this activity also, therefore the text has not been repeated here.	No

4.4.8 Impact assessment summary

The impact assessment (**Table 4.5 to Table 4.9**) indicates that the proposed scheme is not likely to cause a deterioration in the status of the Chichester Harbour or Langstone Harbour water bodies; will not affect Protected Area objectives; will not affect the Shellfish Waters or jeopardise adjacent water bodies, specifically Langstone Oysterbeds water body reaching their target status.

The WFD assessment guidance (Environment Agency, 2017) also requires that, if a proposed activity is within a water body that is designated as heavily modified for the same use as the activity, consideration must be given to whether the proposed activity will jeopardise the RBMP mitigation measures in place now or planned for the future. The Langstone and Chichester Harbour water bodies are designated as heavily modified for flood and coastal protection and therefore consideration of the RBMP mitigation measures is required. This is assessed below in **Section 5**.

5 RBMP Mitigation Measures

Mitigation measures identified within the South East RBMP have been reviewed and consideration given as to whether the proposed scheme will jeopardise their delivery and if there are any opportunities that could be incorporated as part of the scheme.

The RBMP mitigation measures that have been considered for Langstone and Chichester Harbour water body are listed in **Table 5.1 and Table 5.2**.

Table 5.1: Langstone Harbour water body RBMP mitigation measures

No.	Mitigation Measure	Action Required	Will the proposed scheme jeopardise the delivery of this mitigation measure?	Can the proposed scheme contribute to the delivery of this measure?	Justification / Rationale
4	Remove or soften hard bank	Not in place	Yes	No	The purpose of the scheme is to provide flood and erosion protection, and the only way to achieve this, at this location, is via the proposed design.
13	Realign flood defence	Not in place	Yes	No	The Langstone scheme adheres to the adopted 'Hold the Line' policy. There is no opportunity to realign at this location due to landward constraints.
19	Enhance ecology	Not in place	Partially	Yes	Coastal Partners has proactively investigated environmental improvement opportunities in this area. Due to the limited space on site, ecology enhancement options are limited. However, at the time of preparing this assessment, Coastal Partners were investigating funding opportunities for enhancements such as saltmarsh restoration and vertipools and will confirm back if these are to be taken forward.
37	Retain habitats	Not in place	Partially	Partially	The design of the new sea defences at Langstone has been developed ensuring that the least encroaching viable option is taken forward and habitats retained where possible. The proposed scheme would result in the permanent loss of approximately 172m ² of intertidal habitat under the footprint of the new sea wall structures. However, considering the Langstone FCERM Scheme is implementing the SMP and strategic policy, this loss has already been accounted for within the HCRP, for compensation elsewhere.
48	Indirect mitigation	Not in place	No	Yes	The proposed scheme will reduce the risk of flooding. Prevention of uncontrolled pollution incidents to this water body are a benefit of the proposed scheme, to protect the water body (including the shellfish waters).

Table 5.2: Chichester Harbour water body RBMP mitigation measures

No.	Mitigation Measure	Action Required	Will the proposed scheme jeopardise the delivery of this mitigation measure?	Can the proposed scheme contribute to the delivery of this measure?	Justification / Rationale
13	Managed realignment of flood defence assets	Assessment of existing hard defences	Yes	No	The purpose of the scheme is to provide flood and erosion protection, and the only way to achieve this, at this location, is via the proposed design. There is not sufficient space for managed realignment.
48	Activity to create new habitat where it did not exist before	Identify opportunities for new habitat	Yes	No	The purpose of the scheme is to provide flood and erosion protection, and the only way to achieve this, at this location, is via the proposed design. Considering the limited space and the requirement for 10% Biodiversity Net Gain, there is not sufficient space to create new habitat where it did not exist before. However, Coastal Partners are investigating the feasibility of restoring saltmarsh in the vicinity of the scheme, via beneficial use of Dredgings – in attempt to restore a once healthy saltmarsh.
2	Removal of hard engineering structures that modify the natural flow and sediment regime, including weirs, locks, floodgates, sluices, and erosion control structures	Assessment of existing hard defences	Yes	No	There are no structures within the scheme to remove that would modify the natural flow and sediment regime.

No.	Mitigation Measure	Action Required	Will the proposed scheme jeopardise the delivery of this mitigation measure?	Can the proposed scheme contribute to the delivery of this measure?	Justification / Rationale
4	Removal/softening of hard engineering structures that modify natural bank profile	Assessment of existing hard defences	Yes	No	The purpose of the scheme is to provide flood and erosion protection, and the only way to achieve this, at this location, is via the proposed design.
5	Preserve and/or restore existing in stream and riparian/shoreline habitats	Identify opportunities for new habitat	No	Potentially	There is some potential opportunities to preserve and/or restore existing in stream and riparian/shoreline habitats. Coastal Partners are currently investigating the feasibility of restoring saltmarsh via beneficial use of Dredgings.
6	Restore or increase in-channel morphological diversity e.g. riffle and pool creation and bar creation etc.	Identify opportunities for new habitat	Not Applicable to Scheme	No – Not applicable to Scheme	Not applicable to Scheme
7	Rehabilitation of degraded bankside habitats to improve their physical structure and the condition of the riparian zone. Bank rehabilitation includes bank reprofiling, the	Identify opportunities for new habitat	Not Applicable to Scheme	No – Not applicable to Scheme	Not applicable to Scheme

No.	Mitigation Measure	Action Required	Will the proposed scheme jeopardise the delivery of this mitigation measure?	Can the proposed scheme contribute to the delivery of this measure?	Justification / Rationale
	creation of aquatic ledges and removal of hard bank protection etc.				
19	Retro-fitting existing structures to accommodate niche habitats, as opposed to more substantial structural modifications that would be likely to deliver greater hydromorphological change but may not be possible given the use	Identify opportunities for new habitat	No	Potentially	As outlined within Section 4.4.1 there will be no discernible changes to hydromorphology as a result of the scheme. However Coastal Partners are investigating funding opportunities for enhancements such as vertipools which could accommodate niche habitats and can confirm back if these are to be taken forward.
20	Structural changes to locks, sluices, weirs, beach control	Assessment of existing hard defences	Not Applicable to Scheme	No – Not applicable to Scheme	Not applicable to Scheme
36	Action(s) to reduce the extent and spread of invasive non-native species, including actions on our own assets	Assessment of relevant flood defence strategies in conjunction with the delivery of WFD MM	No	No	Best practice will be in place for construction site management and maintenance activities, which will minimise the risk of introduction or spread of INNS. This is included as standard in the CEMP for all Coastal Partners' projects. Any vessels used for the delivery of materials to site will adhere to industry legislation, codes of conduct and/or best practice to

No.	Mitigation Measure	Action Required	Will the proposed scheme jeopardise the delivery of this mitigation measure?	Can the proposed scheme contribute to the delivery of this measure?	Justification / Rationale
					minimise the risk of introduction or spread of INNS. No case specific factors have been identified that would increase the risk of this pressure for the scheme.
37	Leaving habitat or parts of natural habitat while undertaking operations or maintenance in a water body	Assessment of relevant flood defence strategies in conjunction with the delivery of WFD MM	No	No	The design of the new sea defences at Langstone has been developed ensuring the that least encroaching viable option is taken forward and habitats retained where possible. We have limited the construction site boundary to the minimal possible amount (i.e., restricting foreshore access to a maximum of 20m from the existing line of the coastal defences, where it is needed, to protect the foreshore habitats – marked by a silt curtain boundary to further prevent impacts to natural habitats).

6 Cumulative Impacts

The WFD assessment guidance (Environment Agency, 2017) requires that the impact assessment stage includes information about other activities that could affect the same receptors as the proposed scheme, and that the effect of the proposed scheme should be considered together with these other activities. As such, this section of the assessment considers the cumulative impacts on the WFD receptors from other plans or projects.

The ES prepared in support of the planning and marine licence applications for the scheme includes a Cumulative Impact Assessment [CIA] and this has been used to inform this cumulative assessment for the WFD.

In line with agreed practice, this assessment is limited to plans and projects where there is sufficient information to allow consideration of the potential for cumulative or in-combination effects to arise. In the absence of publicly available information (usually in the form of a planning application or a marine licence application) or a defined 'scheme', it is not possible to undertake a proper consideration of in-combination effects (e.g., if proposals are speculative or where assumptions regarding potential impacts may be contentious).

The Natural England (2014) and Marine Management Organisation (MMO) (2014) framework guidance has been used for the cumulative effects assessment in the EIA, with the first step being to determine the effects of the proposed scheme that have the potential to affect receptors in-combination with other proposed activities (i.e. the residual effects that are not significant 'alone'); the next being to determine the likely spatial and temporal overlaps of the plans and projects scoped into the assessment in order to determine where interactions could arise; and the final step being to determine the significance of any potential interactions/in-combination effects identified (together with relevant mitigation). This same approach has been taken for the cumulative assessment for this WFD compliance assessment.

6.1 Projects Identified

There are a number of projects that have been identified as having the potential to have a cumulative environmental impact with the proposed works and have therefore been scoped into this assessment. These projects are detailed in the ES. Relevant searches were undertaken on the MMO public register and the list of projects for inclusion in the cumulative assessment was agreed with the Local Planning Authority [HBC] during pre-application discussions.

Table 16.1 of the **ES** lists the plans and projects scoped into the cumulative impacts assessment for the proposed Scheme. The following fully terrestrial projects have been scoped out of this WFD as they have no potential for impacts on WFD receptors. These terrestrial projects are generally small in scale and the main potential impacts relate to traffic and access only:

- Langstone Technology Park – Application for part demolition and reconfiguration of building 1000, car park layout and new industrial units and outline permission for demolition of existing buildings and erection of new employment space.
- Land Adjacent to Bosmere Medical Centre – Proposal for new headquarters building for Portsmouth Water.
- Land at Kingscroft Farm – Proposed development of up to 120 dwellings.
- Rook Farm – Proposed development of up to 300 dwellings.
- Land to the rear of 49 – 71 Fathoms Reach – proposed development of 51 dwellings.

- Land north of Oysters, Station Road – proposed development of 29 dwellings and associated highway works.
- Land south of Saltmarsh Lane – proposed development of up to 60 dwellings and associated landscape and highway works.
- Land south of the Mallards and west of Langstone Road – proposed development of 65 dwellings.
- Redevelopment of a brownfield site for the provision of 4No. apartment blocks comprising 90No. residential dwellings, parking, public open space, landscaping and other associated works, including demolition of existing buildings on site.

Table 6.1 below provides an assessment of potential cumulative effects on WFD receptors between the remaining plans and projects and the proposed Scheme.

Table 6.1: Assessment of potential cumulative effects on WFD receptors.

Plan or Project	Potential for cumulative effects with scheme
The North Solent Shoreline Management Plan	Yes. The proposed Scheme is delivering the SMP and PEMS policy of 'Hold the Line' (HTL) for this section of coastline. The effects of the SMP and Strategy policies were assessed within the relevant WFDs and associated SEAs and HRA, which concluded a significant adverse effect on the Solent European Marine Sites due to permanent habitat loss due to coastal squeeze and are being compensated via the HCRP. Any effects from the implementation of the SMP and Strategy policies is assessed at the individual scheme level.
Portchester to Emsworth FCERM Strategy (PEMS)	
Hayling Island Coastal Management Strategy (HICMS)	Yes. The HICMS is still in development and has not yet been adopted by Havant Borough Council or approved by the Environment Agency. Nevertheless, the draft Strategy and its accompanying draft environmental assessments including a WFD have identified that option development units where a sustain, maintain and/or improve policy is proposed will result in the loss of intertidal habitat due to coastal squeeze. However, these coastal squeeze losses have already been assessed and included in the HCRP for compensation as part of the North Solent SMP environmental assessments. Any effects from the Langstone scheme will also be undertaken through subsequent stages of the HICMS specifically scheme level WFDs.
Havant Borough Local Plan – The Core Strategy (2011) and The Allocations Plan (2014) Havant Borough Regeneration Strategy	Yes. However, any effects linking to the WFD from the implementation of the Core Strategy policies and allocations as well as the regeneration strategy will be assessed at the individual scheme level as developments come forward through specific WFD assessments if necessary.
South Hayling Beach Management Plan (BMP)	No. Beach recycling activities are undertaken above the water level and have limited effects linking to the WFD. Beach recharge activities involve the use of a dredging vessel to import material. However, beach recharge takes place very infrequently (less than once a year) and only involves one vessel for less than one week in each campaign and as such has a low to negligible impact on underwater noise. These works are also over 5.5km away from the scheme location. Therefore, no significant cumulative effect with the proposed Scheme is expected on WFD receptors.
North Portsea Island (NPI) FCERM Scheme	No. Phases 1 to 4a of the NPI scheme have been completed and have therefore been considered as part of the baseline environment within this ES. Construction for Phase 4b is programmed to be completed in 2024 and therefore will not overlap temporally with the

Plan or Project	Potential for cumulative effects with scheme
	construction of the proposed Scheme. Phase 5 construction works are programmed to commence in 2025, which will overlap temporally with the construction of the proposed Scheme. However, a WFD assessment has been completed, which concluded these works are not likely to cause a deterioration in water body status or jeopardise the achievement of water body objectives in combination with other plans and projects. Therefore, considering the distance of this scheme (5.1km away), together with the mitigation measures incorporated, there are unlikely to be any significant cumulative impacts on WFD receptors between this project and the proposed Scheme.
King Charles III England Coast Path: Portsmouth to South Hayling Stretch	No. The Portsmouth to South Hayling stretch of the England Coast Path (ECP) runs from Old Portsmouth to South Hayling seafront, around Langstone Harbour. The proposal for the PSH stretch of the ECP has been published (with changes submitted in May 2021) but this stretch is still being determined by the Secretary of State. The length of this stretch that overlaps spatially with the proposed Scheme is PSH-2-S061. Potential for cumulative impacts on WFD receptors are considered limited based on the scale of these works. The Access and Sensitive Features Assessment (incorporating the HRA and SSSI impacts) for the PSH stretch of the ECP did not identify any loss or disturbance of intertidal habitat as a result of the proposed route. Overall, there is no potential for cumulative impacts on WFD receptors between this project and the proposed Scheme.
King Charles III England Coast Path: South Hayling to East Head Stretch	No. The South Hayling to East Head stretch of the ECP runs from South Hayling seafront to West Wittering beach. The proposal for the SHE stretch of the ECP has been published but this stretch is still being determined by the Secretary of State. The length of this stretch that overlaps spatially with the proposed Scheme is SHE-2-S002 to SHE-2-S007. Potential for cumulative impacts on WFD receptors are considered limited based on the scale of these works. The HRA for the SHE stretch of the ECP identifies a very small (<5m²) loss of intertidal habitat in Chichester Harbour due to the installation of a boardwalk (at Gutner Point) and a 20m fence (at Ella Nore). However, given the inconsequential size of this habitat loss, it is unlikely that there will be any significant cumulative effects. Overall, there is no potential for cumulative effects on WFD receptors between this project and the proposed Scheme.
Northney Marina maintenance dredging. MMO case ref: MLA/2014/00288/1. Licence ref: L/2014/00368/2	No. This maintenance dredging licence is for dredging of subtidal sediments within the marina for the period from December 2014 to December 2024 and therefore will not overlap temporally with the proposed Scheme construction works. Effects are indicated to be localised. Therefore even if this licence is renewed, there are unlikely to be any significant cumulative noise impacts on WFD receptors between this project and the proposed Scheme.

Plan or Project	Potential for cumulative effects with scheme
Farlington Marshes Coastal Defence and Regulated Tidal Exchange (RTE) scheme (22/00006/EIASCO)	Yes. The Environment Agency is working in partnership with Portsmouth City Council to investigate options for a sustainable solution to flood risk management at Farlington Marshes. As a result of engagement in 2019 with key stakeholders including PCC, Natural England, Coastal Partners and the Hampshire and Isle of Wight Wildlife Trust. The proposed approach is currently Hold the Line with Regulated Tidal Exchange until 2060. An outline design was produced in 2022 and EIA Scoping was undertaken with PCC and the MMO. Information on the project website indicates that a planning application for the project will be submitted in early 2024. However, at the time of writing this ES (March 2024), there is insufficient information available on the timing or detailed design of the proposed works at Farlington Marshes to be able to undertake any meaningful assessment of potential cumulative effects with the proposed Langstone FCERM Scheme. It is anticipated that a scheme at Farlington would provide new intertidal habitat, which would benefit the Langstone Harbour Water Body.
Southern Water 10-year marine licence application for minor maintenance works on their coastal outfalls. (MMO case ref: MLA/2019/00027)	No. A marine licence was granted in 2021 by the MMO to Southern Water for a 10-year licence for minor maintenance works to their coastal outfalls. The application covers 605 coastal outfalls below Mean High Water Springs in the Southern Water region and the location data for the outfalls included within the application adjacent to the scheme are shown in Figure 6.1 below. There are two outfalls covered by this licence within the proposed Scheme area and a further three within 1.5km of the proposed scheme. The Southern Water licence is for minor maintenance works including inspection, repair and replacement activities for outfalls and their associated infrastructure, such as beacons, support structures, flap valves and protection grilles. As part of the submission WFD screening was completed which concluded that there are no activities proposed under the 10-year Marine Licence that require detailed assessment and that no deterioration of water bodies would occur. As such, there is unlikely to be any significant cumulative effects between the Southern Water project and the scheme, should the Southern Water project be constructed at the same time.
Partial Reinstatement and Repair of existing sea wall to a height of 1.4m and Creation of an inner bund with a maximum height of 2.25m to protect habitat for wintering bird populations. Northney Farm,	No. This application has not yet been approved The outline CEMP submitted indicates that no plant or equipment will access the foreshore during the sea wall works – the reconstruction will be carried out from behind the existing sea wall. A coastal Flood Risk Assessment has also been completed. Overall based on the information submitted and distance from the scheme there is limited potential for cumulative impacts on WFD receptors between this project and the proposed Scheme.

Plan or Project	Potential for cumulative effects with scheme
St Peters Road, Hayling Island (APP/23/00507)	



Figure 6.1: Southern Water outfalls in the Langstone area covered by the 10-year maintenance marine licence MLA/2019/00027

7 Concluding Statement

The information within this Water Framework Directive compliance assessment indicates that, providing all the incorporated mitigation measures identified in **Table 4.5 to Table 4.9** are adhered to, the Langstone scheme will not:

- a) Cause deterioration in the current status of the Langstone or Chichester Harbour water body;
- b) Jeopardise the Langstone or Chichester Harbour water body from achieving 'Good Environmental Potential' either now or in the future; or
- c) Prevent the Langstone or Chichester Harbour water body from achieving its objectives as set out in the River Basin Management Plan, therefore no Article 4.7 derogation is required, and the scheme can be consented.

Furthermore, the proposed Langstone scheme is not likely to cause a deterioration in water body status or jeopardise the achievement of water body objectives in combination with other plans and projects.

The mitigation measures identified within this assessment will be included within the Construction Environmental Management Plan [CEMP] for the scheme, which will be adopted by the contractors for the construction works. The CEMP will also set out the responsibilities and requirements of each of the involved parties and the contractors will be contractually bound to abide by those responsibilities and requirements. In this way impacts to the water environment will be minimised and impacts on WFD water bodies will be avoided.

8 References

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Coastal Partners

Appendix B1

Langstone FCERM Scheme

Water Framework Directive Assessment:

Scoping - Chichester Harbour

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The [WFD assessment guidance for estuarine and coastal waters](#) will help you complete the table.

Your activity	Description, notes or more information
Applicant name	Coastal Partners
Application reference number (where applicable)	N/A
Name of activity	Langstone Flood and Coastal Erosion Risk Management (FCERM) Scheme
Brief description of activity	As detailed in the main report a flood defence scheme is proposed consisting of a mix of earth bunds, reinforced concrete sea walls and sheet pile walls.
Location of activity (central point XY coordinates or national grid reference)	SU 71866 04731
Footprint of activity (ha)	Approximately 183m ² of direct impact on encroachment on the foreshore from the proposed coastal defence footprint
Timings of activity (including start and finish dates)	Construction is anticipated to approximately 15 months and proposed to start between Spring 2025 – Autumn 2026

Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	The Langstone frontage is approximately 1km in length and has been split into five frontages. Works on the foreshore have been limited where possible but are proposed along a narrow area as a result of the new sheet pile wall in Frontage 2 and the new concrete sea defence structures in Frontages 3, 4 and 5. Temporary access for machinery and excavation works will also be required within the foreshore area for the construction of the new defences at these frontages.
Use or release of chemicals (state which ones)	None anticipated

Water body ¹	Description, notes or more information
WFD water body name	Chichester Harbour
Water body ID	GB580705210000
River basin district name	South East river basin district
Water body type (estuarine or coastal)	Estuarine
Water body total area (ha)	3012.66406207 ha
Overall water body status (2022)	Moderate
Ecological status	Moderate
Chemical status	Fail
Target water body status and deadline	Good (2027)
Hydromorphology status of water body	Supports good
Heavily modified water body and for what use	Coastal protection, navigation, ports and harbours
Higher sensitivity habitats present	Intertidal seagrass (111.01 ha), Saltmarsh (332.75), Subtidal seagrass (0.41)
Lower sensitivity habitats present	Intertidal soft sediment (1612.24 ha), Rocky shore (1.66ha), Subtidal rocky reef (0.01 ha) and Subtidal soft sediments (961.25 ha)

Phytoplankton status	High
History of harmful algae	No
WFD protected areas within 2km	Habitats and Species Directive, Shellfish Water Directive, Urban Waste Water Treatment Directive, Conservation of Wild Birds Directive and Nitrates Directive

¹ Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status	~~Requires impact assessment~~	Impact assessment not required	Hydromorphology status not at high
Could significantly impact the hydromorphology of any water body	~~Requires impact assessment~~	Impact assessment not required	No new cross-shore structures are proposed as part of the Scheme. The new defences will follow the existing alignment, albeit slightly seawards in Frontage 3,4, and 5 where encasement or sheet piles are required to ensure the stability of existing/new structures as part of the design. Throughout the design process, changes to the footprint of the existing structures, and consequently effects associated with hydromorphology, are being minimised as far as technically feasible. Minor encroachment of approximately 183m ² worst case into the water body will occur however, considering the small size, any changes to hydromorphology that will occur will be very small and localised, limited to the immediate vicinity of any new structure. Consequently the proposed

			works will not result in any discernible changes to the hydromorphology of the Chichester Harbour water body.
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	~~Impact assessment not required~~	The heavily modified designation relates to coastal protection (the same use as activity)

Record the findings for hydromorphology and go to section 2: biology.

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these 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 – impact assessment not required	The worst case footprint of the design is approximately 0.0002km ² and substantially below this 0.5km ² threshold
1% or more of the water body's area			The worst case footprint of the design on the water body is approximately 0.0006% of the water body's area and substantially below the 1% threshold.
Within 500m of any higher sensitivity habitat	Yes– requires impact assessment	~~No – impact assessment not required~~	Saltmarsh is present within 500m

1% or more of any lower sensitivity habitat	~~Yes to one or more – requires impact assessment~~	No – impact assessment not required	The footprint of the activity overlaps with approximately 172m ³ of Intertidal soft sediment or 0.0001% of lower sensitivity habitat so substantially below the 1% threshold.
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⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

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	Continue with questions	~~Go to next section~~	Piling is proposed in frontages 2,3,4 and 5 which may affect migrating fish and/or marine fish spawning or nursery areas
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)	Requires impact assessment	~~Impact assessment not required~~	The proposed piling could impact normal fish behaviour due to potential for underwater noise
Could cause entrainment or impingement of fish	~~Requires impact assessment~~	Impact assessment not required	The proposed works will not involve dredging or water intakes. An impact assessment of entrainment or impingement of fish is therefore not required

Record the findings for biology habitats and fish and go to section 3: water quality.

Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

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)	Requires impact assessment	~~Impact assessment not required~~	Works on the foreshore will take over 14 days. The proposed works could therefore affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle as works are proposed on the foreshore
Is in a water body with a phytoplankton status of moderate, poor or bad	~~Requires impact assessment~~	Impact assessment not required	Phytoplankton status is high
Is in a water body with a history of harmful algae	~~Requires impact assessment~~	Impact assessment not required	No history of harmful algae

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	Requires impact assessment	~~Impact assessment not required~~	The Scheme does not require the use or release of chemicals into the marine environment. The potential for contaminated land to be disturbed during construction is considered low based on analysis of a number of geo-environmental samples collected during outline design (see Section 4.2 of the ESR). However, a risk remains and therefore mitigation is included in the CEMP and via a

			contaminated land method statement and materials management plan and this issue has been scoped in to the WFD assessment.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	~~Impact assessment not required~~	The Scheme does not require the use or release of chemicals into the marine environment. The potential for sediment to be disturbed with contaminants above CEFAS Action Level 1 during construction is considered low based on analysis of a number of geo-environmental samples collected during outline design (see Section 4.3 of the ESR). However, a risk remains and therefore mitigation will be included in the CEMP and this issue has been scoped in to the WFD assessment.

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	~~Requires impact assessment~~ ⁵	Impact assessment not required	The Scheme will not include a discharge pipe or outfall that will release chemicals into the marine environment.

⁵ Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment	~~Impact assessment not required~~	Protected sites are located within 2 km, including the Solent Maritime SAC and Chichester and Langstone Harbours SPA overlapping/adjacent to the Scheme. The Scheme is also located within the Chichester Harbour (Emsworth Channel) Shellfish Waters and a eutrophic coastal sensitive area

⁶ Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

- materials or equipment that have come from, had use in or travelled through other water bodies
- activities that help spread existing INNS, either within the immediate water body or other water bodies

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	No pathways identified through which INNS could be introduced or spread significantly. Best practice measures are in place and incorporated within the draft CEMP submitted as part of the marine licence and planning application.

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	Yes	• The heavily modified designation relates to coastal protection (the same use as activity)
Biology: habitats	Yes	• Saltmarsh is within 500m
Biology: fish	Yes	• Piling is proposed in frontages 2,3,4 and 5 which may affect migrating fish and/or marine fish spawning or nursery areas • The proposed piling could impact normal fish behaviour due to potential for underwater noise
Water quality	Yes	• The proposed works could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle as works are proposed on the foreshore
Protected areas	Yes	Protected sites are located within 2 km, including the Solent Maritime SAC and Chichester and Langstone Harbours SPA potentially overlapping/adjacent to the Scheme. The Scheme is also located within the Langstone Harbour and Chichester Harbour (Emsworth Channel) Shellfish Waters and a eutrophic coastal sensitive area
Invasive non-native species	No	No pathways identified through which INNS could be introduced or spread significantly. Best practice measure are in place and incorporated within the draft CEMP submitted as part of the marine licence and planning application.

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.

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Coastal Partners

Appendix B2

Langstone FCERM Scheme

Water Framework Directive Assessment:

Scoping - Langstone Harbour

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The [WFD assessment guidance for estuarine and coastal waters](#) will help you complete the table.

Your activity	Description, notes or more information
Applicant name	Coastal Partners
Application reference number (where applicable)	N/A
Name of activity	Langstone Flood and Coastal Erosion Risk Management (FCERM) Scheme
Brief description of activity	As detailed in the main report a flood defence scheme is proposed consisting of a mix of earth bunds, reinforced concrete sea walls and sheet pile walls. Works on the foreshore have been limited where possible but are proposed along a narrow area as a result of the new sheet pile wall in Frontage 2 and the new concrete sea defence structures in Frontages 3, 4 and 5. Temporary access for machinery and excavation works will also be required within the foreshore area for the construction of the new defences at these frontages. However these frontages are within Chichester water body. Works within Langstone are landside only
Location of activity (central point XY coordinates or national grid reference)	SU 71866 04731

Footprint of activity (ha)	Approximately 183m ² of direct impact on encroachment on the foreshore from the proposed coastal defence footprint
Timings of activity (including start and finish dates)	Construction is anticipated to approximately 15 months and proposed to start between Spring 2025 – Autumn 2026
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	TBC – the Langstone frontage is approximately 1km in length
Use or release of chemicals (state which ones)	None anticipated

Water body ¹	Description, notes or more information
WFD water body name	Langstone Harbour
Water body ID	GB580705130000
River basin district name	South East river basin district
Water body type (estuarine or coastal)	Estuarine
Water body total area (ha)	1890.75 ha
Overall water body status (2022)	Moderate
Ecological status	Moderate
Chemical status	Fail
Target water body status and deadline	Good (2027)
Hydromorphology status of water body	Supports good
Heavily modified water body and for what use	Coastal protection, and flood defence
Higher sensitivity habitats present	Intertidal seagrass (130.8 ha), Saltmarsh (72.67 ha), Subtidal seagrass (0.18 ha)

Lower sensitivity habitats present	Cobbles, gravel and shingle (24.94 ha), Intertidal soft sediment (1388.93 ha), Rocky shore (10.85 ha), Subtidal soft sediments (382.67 ha).
Phytoplankton status	High
History of harmful algae	Yes
WFD protected areas within 2km	Habitats and Species Directive, Shellfish Water Directive, Urban Waste Water Treatment Directive and Conservation of Wild Birds Directive

¹ Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status	~~Requires impact assessment~~	Impact assessment not required	Hydromorphology status not at high
Could significantly impact the hydromorphology of any water body	~~Requires impact assessment~~	Impact assessment not required	No new cross-shore structures are proposed as part of the Scheme and no works within the foreshore of Langstone Harbour Water Body. However adjacent in Chichester Harbour the new defences will follow the existing alignment, albeit slightly seawards in Frontage 3,4, and 5 where encasement or sheet piles are required to ensure the stability of existing/new structures as part of the design. Throughout the design process, changes to the footprint of the existing structures, and consequently effects associated with hydromorphology, are being minimised as far as technically feasible. Minor encroachment of approximately 183m ² worst case into the adjacent water body will occur however, considering the small size, any changes to hydromorphology that will occur will be very small and localised, limited to the

			immediate vicinity of any new structure. Consequently the proposed works will not result in any discernible changes to the hydromorphology of the Chichester Harbour water body or Langstone Harbour water body.
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	~~Impact assessment not required~~	The heavily modified designation relates to coastal protection (the same use as activity)

Record the findings for hydromorphology and go to section 2: biology.

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these 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 to all – impact assessment not required~~	The scheme footprint does not overlap with this water body
1% or more of the water body's area			Saltmarsh is present within 500m
Within 500m of any higher sensitivity habitat			The scheme footprint does not overlap with this water body
1% or more of any lower sensitivity habitat			

⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

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	Continue with questions	~~Go to next section~~	Some piling is required on the landside and adjacent to this waterbody. In addition piling is require in the marine side of the adjacent Chichester Harbour water body. Therefore due to the potential for indirect effects has been scoped in.
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)	Requires impact assessment	~~Impact assessment not required~~	As above some adjacent terrestrial piling and piling in the adjacent waterbody could indirectly impact normal fish behaviour due to potential for underwater noise
Could cause entrainment or impingement of fish	Requires impact assessment	~~Impact assessment not required~~	The proposed works will not involve dredging or water intakes. An impact assessment of entrainment or impingement of fish is therefore not required

Record the findings for biology habitats and fish and go to section 3: water quality.

Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

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)	Requires impact assessment	~~Impact assessment not required~~	No works are proposed within the foreshore of this waterbody however due to works on the foreshore of the adjacent water body there are the potential or indirect effects.
Is in a water body with a phytoplankton status of moderate, poor or bad	~~Requires impact assessment~~	Impact assessment not required	Phytoplankton status is high
Is in a water body with a history of harmful algae	Requires impact assessment	~~Impact assessment not required~~	History of harmful algae

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	Requires impact assessment	~~Impact assessment not required~~	The Scheme does not require the use or release of chemicals into the marine environment. The potential for contaminated land to be disturbed during construction is considered low based on analysis of a number of geo-environmental samples collected during outline design (see Section 4.2 of the ESR). However, a risk remains and therefore mitigation is included in the CEMP and via a

			contaminated land method statement and materials management plan and this issue has been scoped in to the WFD assessment.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	~~Impact assessment not required~~	The Scheme does not require the use or release of chemicals into the marine environment. The potential for sediment to be disturbed with contaminants above CEFAS Action Level 1 during construction is considered low based on analysis of a number of geo-environmental samples collected during outline design (see Section 4.3 of the ESR). However, a risk remains and therefore mitigation will be included in the CEMP and this issue has been scoped in to the WFD assessment.

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	~~Requires impact assessment~~ ⁵	Impact assessment not required	The Scheme does not include a discharge pipe or outfall that will release chemicals into the marine environment.

⁵ Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment	~~Impact assessment not required~~	Protected sites are located within 2 km, including the Solent Maritime SAC and Chichester and Langstone Harbours SPA overlapping/adjacent to the Scheme. The Scheme is also located within the Langstone Harbour Shellfish Waters and a eutrophic coastal sensitive area.

⁶ Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

- materials or equipment that have come from, had use in or travelled through other water bodies
- activities that help spread existing INNS, either within the immediate water body or other water bodies

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	~~Impact assessment not required~~	No pathways identified through which INNS could be introduced or spread significantly. Best practice measure are in place and incorporated within the draft CEMP submitted as part of the marine licence and planning application.

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	Yes	The heavily modified designation relates to coastal protection (the same use as activity)
Biology: habitats	Yes	Saltmarsh is within 500m
Biology: fish	Yes	- Some piling is required on the landside and adjacent to this waterbody. In addition piling is require in the marine side of the adjacent Chichester Harbour water body. - Adjacent piling could impact normal fish behaviour
Water quality	Yes	- No works are proposed within the foreshore of this waterbody however due to works on the foreshore of the adjacent water body there are the potential or indirect effects. - History of harmful algae
Protected areas	Yes	Protected sites are located within 2 km, including the Solent Maritime SAC and Chichester and Langstone Harbours SPA potentially overlapping/adjacent to the Scheme. The Scheme is also located within the Langstone Harbour Shellfish Waters and a eutrophic coastal sensitive area.
Invasive non-native species	No	No pathways identified through which INNS could be introduced or spread significantly. Best practice measure are in place and incorporated within the draft CEMP submitted as part of the marine licence and planning application.

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.



Coastal Partners

Appendix B3

Langstone FCERM Scheme

Water Framework Directive Assessment:

Scoping - Langstone Oysterbeds

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The [WFD assessment guidance for estuarine and coastal waters](#) will help you complete the table.

Your activity	Description, notes or more information
Applicant name	Coastal Partners
Application reference number (where applicable)	N/A
Name of activity	Langstone Flood and Coastal Erosion Risk Management (FCERM) Scheme
Brief description of activity	As detailed in the main report a flood defence scheme is proposed consisting of a mix of earth bunds, reinforced concrete sea walls and sheet pile walls. Works on the foreshore have been limited where possible but are proposed along a narrow area as a result of the new sheet pile wall in Frontage 2 and the new concrete sea defence structures in Frontages 3, 4 and 5. Temporary access for machinery and excavation works will also be required within the foreshore area for the construction of the new defences at these frontages. However these frontages are within Chichester water body. Works within Langstone are landside only
Location of activity (central point XY coordinates or national grid reference)	SU 71866 04731
Footprint of activity (ha)	Approximately 183m2 of direct impact on foreshore from the coastal defence

Timings of activity (including start and finish dates)	Construction is anticipated to approximately 15 months and proposed to start between Spring 2025 – Autumn 2026
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	TBC – the Langstone frontage is approximately 1km in length
Use or release of chemicals (state which ones)	None anticipated

Water body ¹	Description, notes or more information
WFD water body name	Langstone Oysterbeds
Water body ID	GB510070073000
River basin district name	South East River Basin District RBMP
Water body type (estuarine or coastal)	Transitional ¹
Water body total area (ha)	15.938 ha
Overall water body status (2022)	Moderate
Ecological status	Good (does not require assessment 2022)
Chemical status	Fail (does not require assessment 2022)
Target water body status and deadline	Good (2027) Low confidence
Hydromorphology status of water body	Artificial ²

¹ Transitional in accordance with the EA Catchment explorer <https://environment.data.gov.uk/catchment-planning/WaterBody/GB510070073000>. Estuarine in accordance with the water body summary table <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

² Artificial in accordance with the EA Catchment explorer <https://environment.data.gov.uk/catchment-planning/WaterBody/GB510070073000>. Heavily modified water body for flood protection in accordance with the water body summary table <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

Heavily modified water body and for what use	Artificial in accordance with the EA Catchment explorer ³ . However heavily modified water body for flood protection in accordance with the EA water body summary table (the same use as activity) ⁴ . The EA catchment explorer is understood to be more updated and therefore the water body is not considered a water body that is heavily modified for the same use as activity.
Higher sensitivity habitats present	Saltmarsh (0.70 ha)
Lower sensitivity habitats present	Intertidal Soft Sediment (17.37 ha) ⁵ and Rockyshore (Intertidal rock A1) and Gravel and Cobbles (intertidal and subtidal coarse sediment A2.1, A5.1) ⁶
Phytoplankton status	-
History of harmful algae	Not monitored
WFD protected areas within 2km	Habitats and Species Directive, Shellfish Water Directive, Urban Waste Water Treatment Directive and Conservation of Wild Birds Directive

¹ Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

³ <https://environment.data.gov.uk/catchment-planning/WaterBody/GB510070073000>

⁴ <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

⁵ Intertidal soft sediment only in accordance with the water body summary table <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>.

⁶ Rockyshore/Gravel and Cobbles noted on <https://magic.defra.gov.uk/MagicMap.aspx> WFD mapping

Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status	~~Requires impact assessment~~	Impact assessment not required	Hydromorphology status not at high
Could significantly impact the hydromorphology of any water body	~~Requires impact assessment~~	Impact assessment not required	No new cross-shore structures are proposed as part of the Scheme and no works within the Langstone Oyster beds. However adjacent in Chichester Harbour the new defences will follow the existing alignment, albeit slightly seawards in Frontage 3,4, and 5 where encasement or sheet piles are required to ensure the stability of existing/new structures as part of the design. Throughout the design process, changes to the footprint of the existing structures, and consequently effects associated with hydromorphology, are being minimised as far as technically feasible. Minor encroachment of approximately 183m ² worst case into the adjacent water body will occur however, considering the small size, any changes to hydromorphology that will occur will be very small and localised, limited to the immediate vicinity of

			any new structure. Consequently the proposed works will not result in any discernible changes to the hydromorphology of Langstone Oysterbeds water body
Is in a water body that is heavily modified for the same use as your activity	~~Requires impact assessment~~	Impact assessment not required	Artificial in accordance with the EA Catchment explorer ⁷ . However heavily modified water body for flood protection in accordance with the EA water body summary table (the same use as activity) ⁸ . The EA catchment explorer is understood to be more updated and therefore the water body is not considered a water body that is heavily modified for the same use as activity.

Record the findings for hydromorphology and go to section 2: biology.

⁷ <https://environment.data.gov.uk/catchment-planning/WaterBody/GB510070073000>

⁸ <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these 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 to all – impact assessment not required	The scheme footprint does not overlap with this water body
1% or more of the water body's area			
Within 500m of any higher sensitivity habitat			Saltmarsh is over 500m from the works. Considering this distance and the small scale of the works not impacts are anticipated.
1% or more of any lower sensitivity habitat			The scheme footprint does not overlap with this water body

⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

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	~~Continue with questions~~	Go to next section	Some piling is required as part of the works. However, by default any risk of potential impacts would also be reduced to acceptable levels by the any mitigation measures adopted for Chichester and Langstone Harbour water bodies. Therefore, considering the distance of the proposed scheme from this water body and using this risk based approach, no additional assessment of Langstone Oysterbeds water body is considered necessary.
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)	~~Requires impact assessment~~	Impact assessment not required	
Could cause entrainment or impingement of fish	~~Requires impact assessment~~	Impact assessment not required	

Record the findings for biology habitats and fish and go to section 3: water quality.

Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

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)	Requires impact assessment	Impact assessment not required	No works are proposed within the foreshore of this waterbody. Due to the distance of this waterbody any indirect effects are considered unlikely and any indirect impacts will be assessed and mitigated for within the adjacent Chichester and Langstone Harbour water bodies. No further assessment is required for this water body.
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	Phytoplankton status not assessed for this water body
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	No history of harmful algae

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	Requires impact assessment	Impact assessment not required	The Scheme does not require the use or release of chemicals into the marine environment. The potential for contaminated land to be disturbed during construction is considered low based on analysis of a number of geo-environmental samples collected during outline design (see Section 4.2 of the ESR). Due to the distance of this

			waterbody any indirect effects are considered unlikely and any indirect impacts will be assessed and mitigated for within the adjacent Chichester and Langstone Harbour water bodies. No further assessment is required for this water body.
It disturbs sediment with contaminants above Cefas Action Level 1	~~Requires impact assessment~~	Impact assessment not required	The Scheme does not require the use or release of chemicals into the marine environment. The potential for sediment to be disturbed with contaminants above CEFAS Action Level 1 during construction is considered low based on analysis of a number of geo-environmental samples collected during outline design (see Section 4.3 of the ESR). Due to the distance of this waterbody any indirect effects are considered unlikely and any indirect impacts will be assessed and mitigated for within the adjacent Chichester and Langstone Harbour water bodies. No further assessment is required for this water body.

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	~~Requires impact assessment~~ ⁵	Impact assessment not required	The Scheme does not include a discharge pipe or outfall that will release chemicals into the marine environment.

⁵ Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment	~~Impact assessment not required~~	Protected sites are located within 2 km, including the Solent Maritime SAC and Chichester and Langstone Harbours SPA overlapping/adjacent to the Scheme. The Scheme is also located within the Langstone Harbour Shellfish Waters and a eutrophic coastal sensitive area. Due to the distance of this waterbody any indirect effects are considered unlikely and any indirect impacts will be assessed and mitigated for within the adjacent Chichester and Langstone Harbour water bodies. No further assessment is required for this water body.

⁶ Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

- materials or equipment that have come from, had use in or travelled through other water bodies
- activities that help spread existing INNS, either within the immediate water body or other water bodies

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	~~Impact assessment not required~~	No pathways identified through which INNS could be introduced or spread significantly. Best practice measure are in place and incorporated within the draft CEMP submitted as part of the marine licence and planning application.

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	- Hydromorphology status not at high - No new cross-shore structures are proposed as part of the Scheme and no works within the Langstone Oyster beds. Any changes to hydromorphology that will occur will be very small and localised, limited to the immediate vicinity of any new structure and outside this waterbody. - Not considered a water body that is heavily modified for the same use as activity.
Biology: habitats	No	- The scheme footprint does not overlap with this water body - Saltmarsh is over 500m from the works
Biology: fish	No	Some piling is required as part of the works. However, by default any risk of potential impacts would also be reduced to acceptable levels by the any mitigation measures adopted for Chichester and Langstone Harbour water bodies. Therefore, considering the distance of the proposed scheme from this water body and using this risk based approach, no additional assessment of Langstone Oysterbeds water body is considered necessary.
Water quality	No	- No works are proposed within the foreshore of this waterbody. Due to the distance of this waterbody any indirect effects are considered unlikely and any indirect impacts will be assessed and mitigated for within the adjacent Chichester and Langstone Harbour water bodies. - Phytoplankton status not assessed for this water body - No history of harmful algae

		The Scheme does not require the use or release of chemicals into the marine environment or include a discharge pipe or outfall
Protected areas	No	Protected sites are located within 2 km, including the Solent Maritime SAC and Chichester and Langstone Harbours SPA overlapping/adjacent to the Scheme. The Scheme is also located within the Langstone Harbour Shellfish Waters and a eutrophic coastal sensitive area. Due to the distance of this waterbody any indirect effects are considered unlikely and any indirect impacts will be assessed and mitigated for within the adjacent Chichester and Langstone Harbour water bodies. No further assessment is required for this water body.
Invasive non-native species	No	No pathways identified through which INNS could be introduced or spread significantly. Best practice measures are in place and incorporated within the draft CEMP submitted as part of the marine licence and planning application.

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.