



Langstone Coastal Defence Study January 2020 Design Update

Reducing Coastal Flood and Erosion Risk to the Langstone Community



Working together - protecting our coastline

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Who are the ESCP?

Eastern Solent Coastal Partnership



Map of ESCP coverage

The ESCP are a team of council officers delivering comprehensive coastal management services across the coastlines of Fareham, Gosport, Havant and Portsmouth.

Partnership Vision:

“To reduce the risk of coastal flooding and erosion to our communities and encourage the provision of technically, environmentally and economically sustainable coastal defence and protection measures.”

The ESCP has been recognised as an example of best practice by the Environment Agency and Defra, with suggestions that the model should be encouraged across the rest of the country.



Above left: Anchorage Park Coastal Defences with Wildflower Meadow. Above right: Tipner Lake Coastal Path with Paving and Giant Sun loungers. Below: Hill Head Coastal Defence Wall with Safety Rail.



The ESCP undertakes a broad range of coastal management activities, including:

- Setting coastal management policy, through the development of Shoreline Management Plans and Coastal Strategies
- Designing and implementing civil engineering schemes
- Regular management, inspection and maintenance of sea defences
- Identifying opportunities to enhance our coastal environment
- Leading and contributing to industry research
- Engaging with local communities, organisations and businesses on all aspects of our work

These different activities are distributed across three teams:

- Coastal Policy, Strategy and Environment
- Capital Projects
- Operations

Since 2012 we have been delivering projects to the highest standard, reducing coastal flood and erosion risk to thousands of homes and businesses. The Partnership has surpassed the work that each Local Authority could have achieved in isolation delivering multi-million pound projects while making a combined saving of £1.8 million.

Coastal roles and responsibilities

Who is responsible?

Coastal Protection Authorities and the Environment Agency have permissive powers to carry out works to protect against coastal flooding and erosion. However this is not a legal obligation. This means Havant Borough Council has the 'power' to carry out coastal protection works but is not duty bound to do so and will not be liable for the failure to exercise these powers.

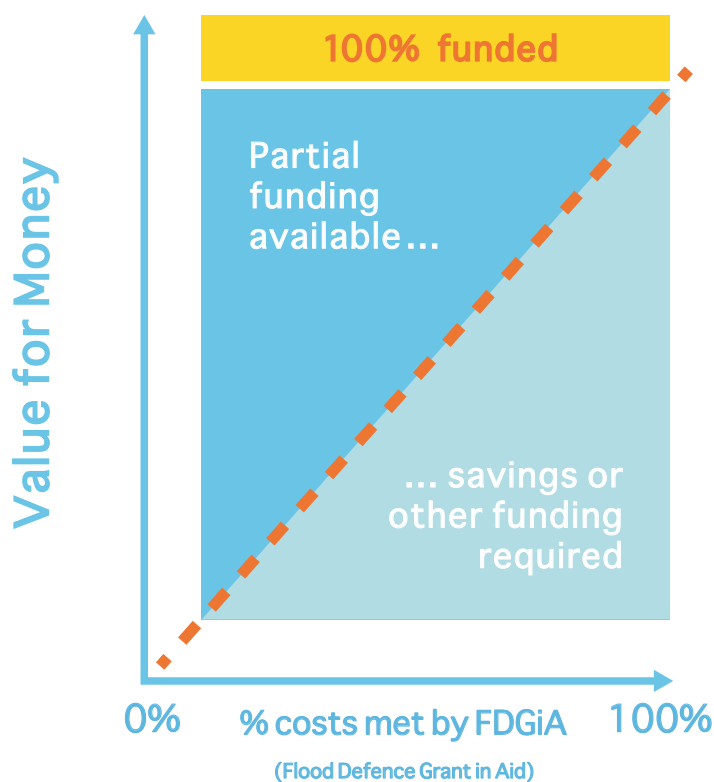
Local Authorities and the Environment Agency do however act to try and secure funding and deliver projects where there are sufficient benefits to the public, i.e. when there is a clear economic benefit to developing coastal defence works, when there is an appropriate engineering solution that is achievable and where environmental legislation is not contravened.

Private land owners and homeowners have ultimate responsibility for protecting their own property and land from flooding and erosion and they must act within statutory planning regulations and other applicable legislation to do so.

How schemes are funded

The Government has put in place a mechanism for funding flood and coastal erosion risk management schemes called Partnership Funding. The principles are quite simple, where projects do not qualify for full government funding, external funding contributions can be sought to make up the shortfall.

A scheme at Langstone is not guaranteed to attract full government funding, therefore we are actively working with the council and external partners to explore opportunities to identify additional funding for the scheme.



Why we are here?

2010

North Solent Shoreline Management Plan

The North Solent Shoreline Management Plan (SMP) is a high level policy document setting out a framework for future management of the coastline over the next 100 years. It was adopted by Havant Borough Council in 2010 and recommends a 'Hold the line' policy to maintain or upgrade the level of protection provided by the coastal defences in Langstone.

2013

Portchester Castle to Emsworth Strategy

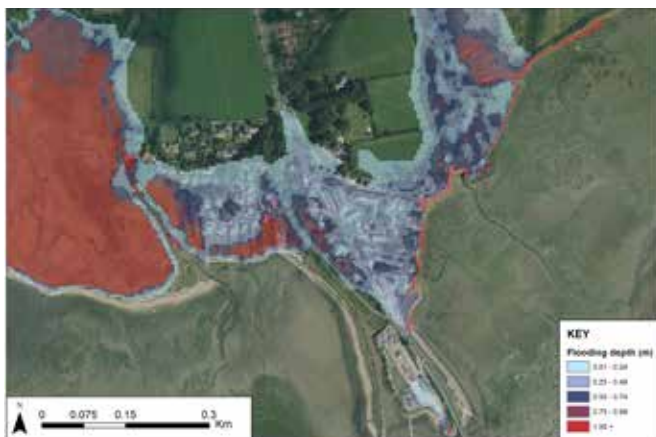
The Portchester to Emsworth Strategy covers a 27km stretch of coastline marking the northern boundaries of Portsmouth, Langstone and Chichester Harbours. The Strategy looks at how the SMP policy can be implemented at a more local level and identifies areas where work may be required over the next 100 years. The Strategy recommended improvement of the defences at Langstone through a phased approach.

2018

Langstone Study

Current defences are in poor condition and some are reaching the end of their life, so there is a need to address these issues now in order to reduce flood risk to the Langstone community moving forward into the future. Due to sea level rise, in 100 years time more than 120 homes in Langstone are at risk of tidal flooding in an extreme event. The aim of this study is to develop coastal management options to reduce the flood and erosion risk to the community, important heritage assets and the A3023, the only road crossing to Haying Island.

Present day 1 in 200 year coastal flood event (2019)



Aerial Photography: Channel Coastal Observatory (2013)

Predicted 1 in 200 year coastal flood event (2119)



Aerial Photography: Channel Coastal Observatory (2013)

YEAR	RESIDENTIAL	COMMERCIAL	TOTAL
PRESENT DAY	72	4	76
2119	122	9	131

Properties at risk of flooding and erosion over the coming century if we 'Do Nothing'. Based on 1 : 200 year (0.5% annual chance) flood event.

Climate change and sea level rise

Planning for the long term future of our Coastal Communities



Climate Change

Relative sea level rises refer to the effective change in sea level in relation to the land surface and takes into account long term land movement. The combined effect of these changes are predicted to result in an annual sea level rise in Southern England of about 6mm per year.

The rise in sea level due to global warming is caused by thermal expansion of the oceans and to a lesser extent from melting of ice caps and glaciers.

The relative rise in sea level is also caused by a phenomenon called isostatic readjustment. Effectively the north-west of Britain is rising following glacial withdrawal at the end of the last ice age, thus causing the south-east of England to sink.



Our Responsibility

In all our designs we have to take account of and plan for sea level rise. Scientists have determined that the temperature of central England has risen by almost 1°C over the last century. Winters are getting increased rainfall and average sea levels are rising.

The long-term effects of climate change are uncertain, however in some shape or form it will affect us all. With this in mind we must start acting now to protect our coastline and ensure that our actions are sustainable for future generations.

Havant Borough Council takes human-induced climate change very seriously. Many of the services that they provide directly affect the local economy and the environment. When developing the Council Strategies and how services are being delivered, the council will always consider how these things could affect climate change and how communities can respond to the effects of climate change.

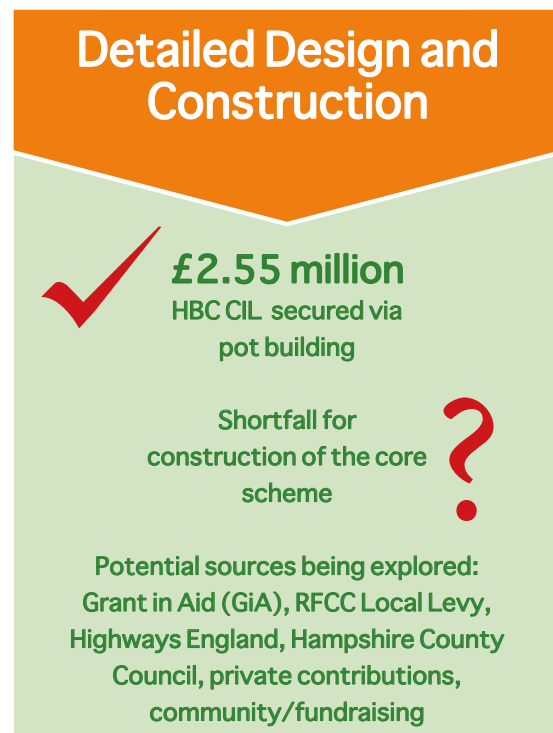
Funding challenges

The Eastern Solent Coastal Partnership, on behalf of Havant Borough Council are undertaking this coastal defence study to appraise options and develop outline designs for defences at Langstone.

The objectives of the study are:

- Identify the most appropriate way forward to manage Langstone's flood and erosion risks into the future
- Cost the leading approach
- Develop a business case for the leading approach
- Identify potential sources of funding to progress a scheme

Funding has only been secured for this study.
FUNDING IS NOT guaranteed for detailed design and construction at this point.



Heritage considerations

Havant
BOROUGH COUNCIL

The coastline at Langstone is popular with locals and tourists due to its unique setting and is an important cultural heritage area.

Mill Lane & Langstone Conservation Areas

Two conservation areas lie within the study area; Mill Lane and Langstone.

Langstone has 7 Grade II Listed buildings including The Ship Inn and the Royal Oak public houses, all of which lie within the flood risk area.



The Royal Oak



The Ship Inn

Historic Causeway

An historic causeway, known as the Wadeway, was initially the only crossing between Langstone and Hayling Island before the bridge was built.



The First Road Bridge and Langstone Quay . (A Langstone Miscellany –Ann Griffiths)

Hayling Billy Trail

The popular Hayling Bill Trail follows the route of the former railway line that connected Havant with Hayling Island. At low tide you can see the remains of the old bridge footings extending from the relic spit across to Hayling Island.



Hayling 'Billy' train crossing onto the island. (A history of the Hayling Island Branch Line by Ralph Cousins -photograph by Alan Bell).

Archaeology

Langstone was an important area in the Roman period and the A3023 follows the line of the Roman road that ran from Hayling Island to Havant. The area also has potential for prehistoric and medieval buried archaeology.



Langstone House with cottage and shellfish store, now The Winkle Market. (A Langstone Miscellany –Ann Griffiths)

Environmental considerations

Langstone and Chichester Harbour and the surrounding land supports a large variety of wildlife and habitats, the majority of which are protected at an international level by law. **Any scheme must be designed in compliance with these laws.**



Environmental Designations

Internationally important populations of rare wildfowl and wading birds visit Langstone and Chichester Harbours during the winter. The harbours contain areas of saltmarsh, mudflat and eelgrass habitats that support these bird species alongside fish and marine mammals (including common and grey seals).



Ecological Surveys

We have completed specialist habitat surveys to confirm which species could be impacted by the works. These surveys will be consulted on with ecological experts including Natural England, the Environment Agency, the RSPB, the Wildlife Trusts and Hampshire County Council's ecology team.



What are the choices?

Do Something “Leading Option”

Adaptation “Managing Change”

Do Nothing “Walk Away”



Flood walls



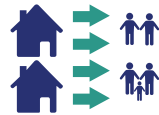
Property flood resilience



Flood warnings



Coastal infrastructure



Evacuation



Moving people to new places



Replace / improve failing coastal defences as sensitively as possible but accept that it will change the way the coastline currently looks.

Reduce flood and erosion risk to Langstone properties and businesses

Preserve the conservation areas and protect important heritage assets for the future

Reduce flood risk to the A3023, critical road infrastructure to Hayling Island

A resilient village for the next generation

Adapt to living with the consequences of sea level rise and climate change through:

- Adaptation of properties, i.e. property level resilience
- Effective flood warnings
- Evacuation
- Changing use or loss of properties at immediate risk
- Altering proposed new infrastructure to protect only the A3023
- Undertake no new front line flood and erosion protection works
- Ultimately relocate people

Flood and erosion risk, unmanaged and will increase significantly over time to properties and A3023

Existing defences will continue to deteriorate and eventually fail

Conservation area and heritage at significant risk of damage or loss

When defences fail, frontline properties at immediate risk of structural damage, undermining or collapsing

Langstone village becomes unsustainable in the long term

HBC are undertaking this study using our permissive powers to promote a public scheme but if we are not able to identify and agree a technically, environmentally acceptable, sustainable and affordable solution then the responsibility will continue to rest with the landowners and residents to take their own measures to live and adapt with climate change and the increasing risk of flooding.

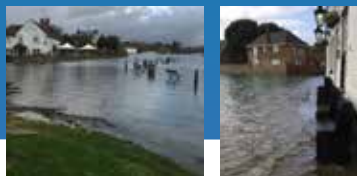
What are your views?

Story so far

March 2018

Funding Secured

Funds approved from Regional Flood Coastal Committee (RFCC) and Havant Borough Council (HBC) Community Infrastructure Levy (CIL) for the Langstone Option appraisal study.



— **May 2018** →

Project Start-up
Commissioned AECOM to provide professional services to deliver the Langstone Study and Outline Designs.

— **Sept 2018** →

Langstone Stakeholder Working Group 1

On 5th September 2018, the Langstone Stakeholder Working Group was formed and a workshop held to share information, gather feedback, concerns and local aspirations.

Option Development—Reduce to Short List of Options

The longlist of options was cut down to a shortlist by appraising each option against a number of categories or questions using multi-variate analysis.

Define Long List of Options

All potential defence measures to implement various management options were considered.

Ground Investigation Works

Ground Investigation works carried out along the frontage.



— **Nov 2018**

Stakeholder Working Group 2

Workshop to update on progress, share the shortlisted options, the process and the next steps of the study.



Public Exhibitions on Shortlisted Options

Exhibitions to present the short list of options to the public and gain feedback to inform the leading options.



— **2019**

Stakeholder Working Group 3

Update on project progress, funding, leading options, core scheme alignment and the next steps.



Local Resident Engagement

Face-to-face meetings with residents along the scheme frontage who may be directly affected.

— **June 2019** —

Short List Appraisal and Identify Leading Options:

The leading options were selected through similar appraisal for each frontage, incorporating feedback from the public exhibitions, where feasible to do so.

Develop Outline Designs

The leading options for each frontage have been developed into outline designs.



— **2020** →

We Are Here

Public exhibitions to present the leading options to the public and gain further feedback.



Core scheme overview

What is the core scheme being promoted?

Affordability is a key constraint and driver for selecting the combination of leading options to identify the scheme alignment, the duration of the scheme and standard of protection the scheme will provide.

The 'Core Scheme' represents the most affordable combination of options that protects the greatest number of properties and the A3023 road to Hayling Island.

With a total cost of £4.5 million (including 60% risk at this outline design stage), this alignment represents the least-cost scheme, designed to provide a present day 0.5% Annual Exceedance Probability (AEP) standard of protection, with a scheme design life of 50 years.

At present, £3.1 million worth of contributions have been secured via HBC Community Infrastructure Levy (CIL) and Southern Regional Flood and Coastal Committee (RFCC) Local Levy, with the potential for an additional £500k of FCERM GiA funding. However, even with these contributions, there is currently still a £900k shortfall for construction of the core scheme. Additional funding streams are being explored to help close this gap.

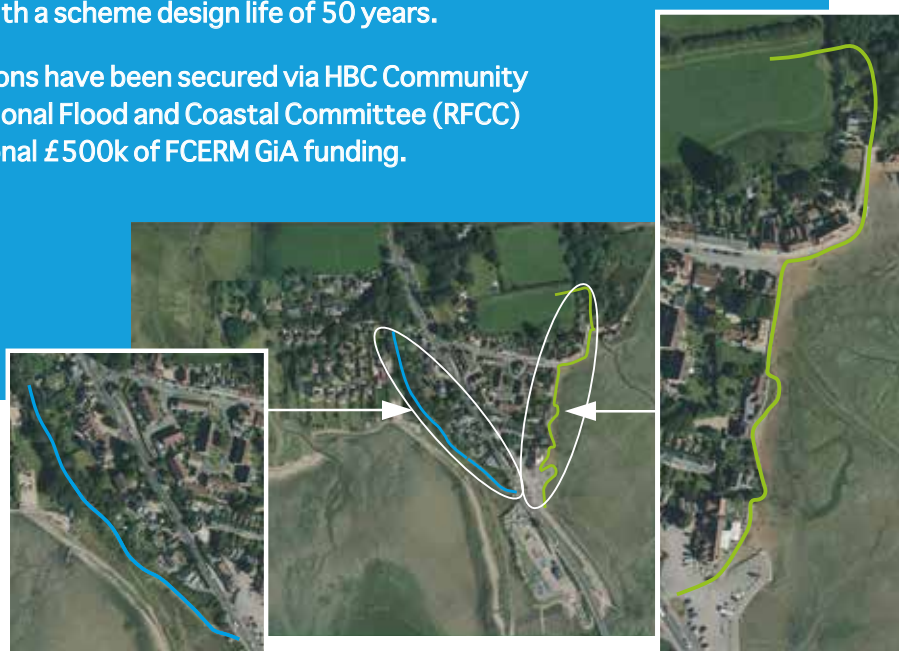
ADD-ON OPTIONS

Due to affordability, there are some areas along the Langstone frontage, including Mill Lane, Langstone Spit and Langstone Sailing Club that are not included in the core scheme.

If additional funding is sourced during the detailed design stage, some or all of these areas could be included in the scheme as 'add-on' options.

Engagement with Mill Lane residents is ongoing and the project team have agreed to take the leading options for the Mill Lane area through to detailed design. The ESCP will provide advice and support to these residents, to ultimately include their frontage within the scheme if funding is found or to help them progress repairs etc privately in the future.

Langstone Sailing Club are concerned about the erosion that is occurring at the southern tip of Langstone Spit, and the implications this has on providing protection to their assets. The project team are currently working with them to investigate how this option can be included in the detailed design phase of the project and to provide advice on funding streams to potentially enable it to progress in the future.



Langstone West

What are the leading options being promoted?

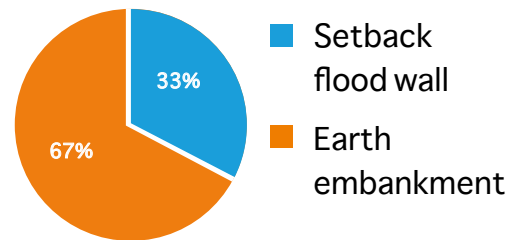
The leading option being presented here is:

- Land raising of the footpath in the northern section, transitioning into an earth embankment in the southern section

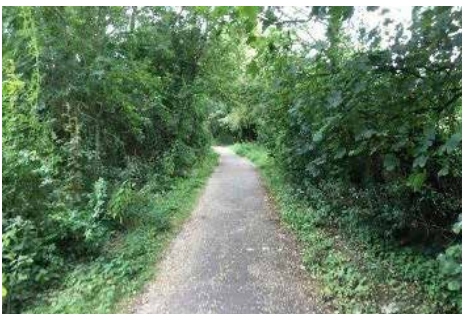
The shortlisted options included an earth embankment and setback flood wall. The setback flood wall option has been revised in the northern section to raising of the footpath. This change was made due to the fact that the height of wall required was actually less than originally expected, so raising the path would be a cheaper, less intrusive option.

Your feedback:

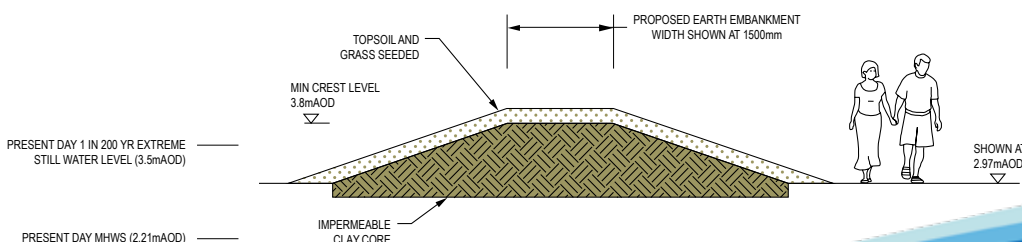
During shortlist option engagement, 67% of the public found the embankment the most acceptable option.



Land raising



Earth embankment



The Ship Inn

What are the leading options being promoted?

The leading options being presented here are:

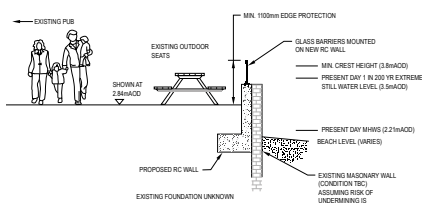
- Flip up floodwall or floodgate across The Ship Inn car park to tie-in to a small wall beside the A3023.
- Continued maintenance of the quay wall around the car park.
- Glass-topped flood wall along the front of The Ship Inn courtyard and adjacent building, includes a floodgate for access, if required.

The shortlisted options also included a set-back flood wall around the quay and flood gates at each slipway. Compared to the flip-up floodwall, these options have similar costs, however the flip-up flood wall was put forward as the leading option on heritage, environmental and social grounds.

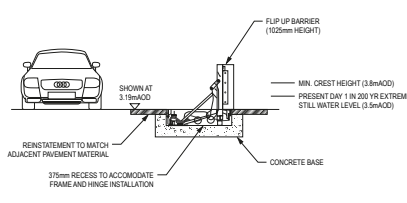


Aerial Photography (2016): Channel Coastal Observatory

Glass-topped floodwall

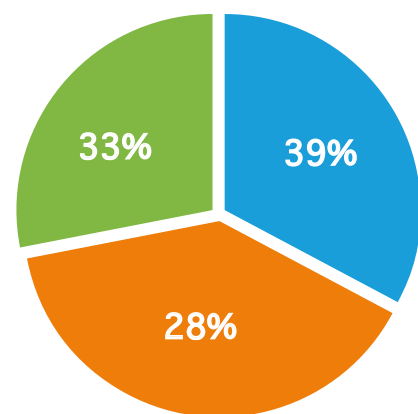


Flip-up floodwall



Your feedback:

During shortlist option engagement, 39% of the public found the flip-up floodwall the most acceptable option.



- Flip-up flood wall
- Setback flood wall
- Setback glass topped flood wall

* Please note that these visualisations are purely examples and should not be taken literally at this stage as the options will not be determined fully until the next stage of the project.

The Langstone Village

What are the leading options being promoted?

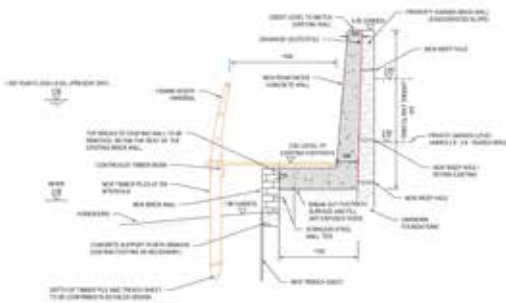
The leading options being presented here are:

- Setback reinforced floodwall adjacent to the existing garden walls, with timber boardwalk to improve access to the existing footpath.
- Setback reinforced floodwall adjacent to the existing seawall at Green Cottage, with floodgate for access onto the boardwalk.
- Floodproof existing wall at the Winkle Market with boardwalk.

The shortlisted options also included reinforcing / replacing the existing defence. This option was discounted on cost and technical grounds. Technically there are major constraints associated with reinforcing / replacing the existing defence including, space constraints, land ownership, trees and potential for structural damage to adjacent properties.

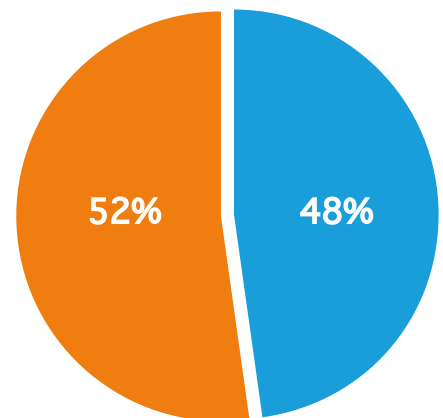


Setback floodwall with boardwalk



Your feedback

During shortlist option engagement, 52% of the public found the setback floodwall and boardwalk the most acceptable option.



- Setback floodwall and boardwalk
- Reinforcement/replace existing defence

* Please note that these visualisations are purely examples and should not be taken literally at this stage as the options will not be determined fully until the next stage of the project.

The Royal Oak

What are the leading options being promoted?

The leading options being presented here are:

- Floodgates across the end of Langstone High Street
- Frontline floodwall, following the alignment of the existing seawall in front of the Royal Oak to maximise accessibility to the footpath
- Moving north, set-back floodwall along the west side of the footpath, transitioning into an earth embankment in the field to the north

Reinforcing/replacing the existing defence was discounted on technical grounds. This option is considered to be technically unfeasible due to the age of existing structures, the listed nature of the buildings, gaps in walls and low windows.



Current defence



Design visual of frontline wall



Current wall

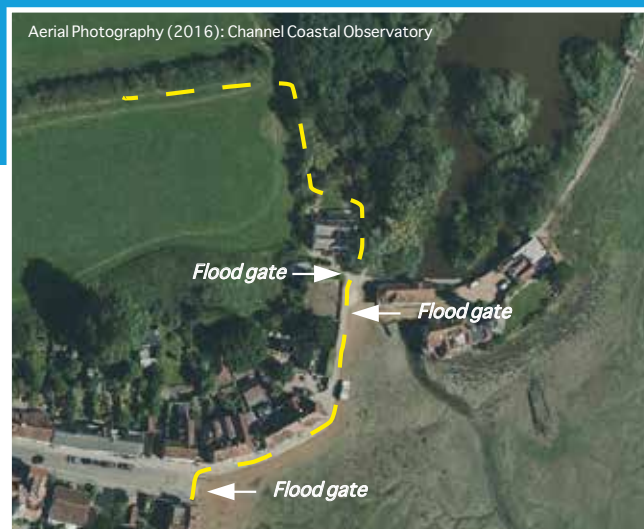


Design visual with 'example' access option



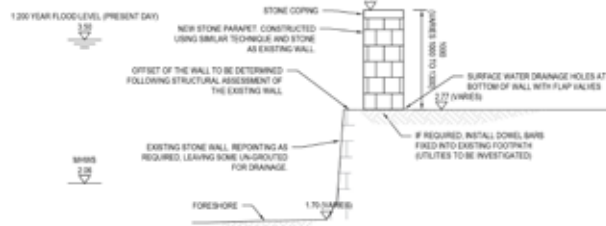
Floodgate example
www.floodcontrolinternational.com/CASE-STUDIES/case-study-leith.html

**Please note that these visualisations are purely examples and should not be taken literally at this stage as the options will not be determined fully until the next stage of the project.*



Aerial Photography (2016): Channel Coastal Observatory

Flood gate
Flood gate
Flood gate

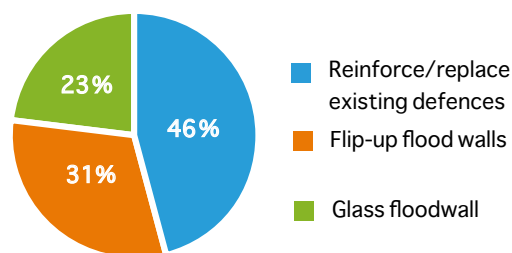
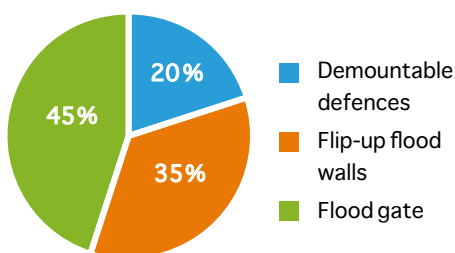


Flood gate option across the High Street 45%

Reinforce/replace existing defences around The Royal Oak 46%

Your feedback:

During shortlist option engagement, the most acceptable options to the public were as follows:



What happens next?



Now:

Public events -
Leading options

Winter 2019/20:

Begin detailed designs
and investigate
potential funding
partners

Spring 2022/23:

Construction start
(estimated)

Detailed Design

The detailed design stage of the project is likely to take 18-24 months. Whilst the principles of the scheme have been defined, following the technical guidance which governs our industry, there is at least another 2 years for these options to be refined, adapted and if necessary, changed through the detailed design process. This includes how they will look and feel with strong consideration of community views but of course within the wholly appropriate constraints of our regulators Natural England, Historic England, Chichester Harbour Conservancy, Langstone Harbour Board and the Local Planning Authority.

Community Engagement

We will carefully review all of the feedback from the public events and questionnaires to inform the next stage of the project.

Engagement with the stakeholder working group, residents, landowners, public and regulators will continue throughout the detailed design stage to refine and shape the leading options to ensure the project arrives at the best outcome.

*To see all engagement materials to date, please visit us
online at: www.escp.org.uk/langstone*

