Meeting not open to the Public

Agenda for Sidmouth and East Beach BMP Project Steering Group
Thursday, 22nd August, 2019, 2.00 pm

To: Sidmouth and East Beach BMP Project Steering Group

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14 August 2019; republished 16 August 2019

1 **Welcome and apologies**

2 **Notes from the previous meeting and terms of reference**. (Pages 2 - 8)

Notes from the previous meeting held on the 9 August 2019. The terms of reference are also included as these have been updated for membership following Annual Council in May 2019.

3 **Recap on Beach Management Scheme project** (Pages 9 - 48)

John Golding, Strategic Lead Housing, Health and Environment will provide a recap of the project. Included in the agenda papers is the business case as it stands. You can also view the information on the project displayed at the exhibition and the posters on the coastal scheme.

4 **Revision of preferred option**

Presentation update from Royal Haskoning DVH

5 **Partnership funding update**

East Devon District Council

Notes of meeting of the Steering Group for the Sidmouth Beach Management Scheme, held at Knowle, Sidmouth on 9 August 2018

Attendance list at end of document. The meeting started at 10.00am and finished at 11.26am.

1. Welcome and introduction

The Chairman welcomed those present and invited everyone to introduce themselves.

2. Notes of the 10 May 2018

The notes of the previous meeting were received.

3. Outline design, economics, appraisal and Environmental Impact Assessment

Representatives of Royal Haskoning DHV presented to the group the preferred outline design for the scheme. They recapped as to what was happening now in terms of coastal process, with the transfer of shingle and movement tending to be in an easterly direction.

The beach management plan (BMP) objectives were:

- Manage the risk of coastal flooding and erosion along the Sidmouth frontage.
- Scheme must not adversely impact the integrity of the environmental features.
- The BMP identified measures to develop and implement a sustainable solution.
- The outline business case is the next stage of the BMP and was required to develop the BMP outcomes.

The preferred option within the BMP:

- One or two new rock groynes along East Beach over a distance of 200m.
- Modify length of River Sid training wall and East Pier Rock Groyne (if required).
- Repairs to River Sid training wall.
- Beach recharge and recycling along Sidmouth Town and East Beach frontages.

The Steering Group were reminded of the principles of beach management:

- The approved beach management approach at Sidmouth East Beach consisted of the retention of a design beach by groynes.
- The key to successful beach management involved retaining a design beach for as long as possible. At Sidmouth this was balanced against the need to allow the cliff to continue to erode.

- The required design beach (size and level) was identified through modelling and the role of the groyne structures was to hold the beach in place.
- The closer spaced groynes are, the more control you have over the beach.
- The longer groynes are, the more control you have over the beach.
- Short and widely spaced groynes have less control over the beach, less certainty over operation, and are likely to have increased beach management costs for the future.
- Beaches are mobile and would be expected to move within bays, and reshape, during storm events.
- A beach needs to have a minimum crest level and crest width otherwise it will be very susceptible to losses (which could be permanent) under mild storm events.
- Overtopping will still occur over the beach crest under sea storms which will continue to cause cliff erosion.
- Recycling vs Renourishment (importation) cost: £10 per m^3 vs £40 per m^3.

There were five concept options:

1. 1 x 80m rock groyne.
2. 2 x 80m rock groynes.
3. 1 x 120m rock groyne.
4. 1 x 80m rock groyne & 1 x 120m rock groyne.
5. 2 x 120m rock groynes.

Royal Haskoning DHV had undertaken an appraisal of these five concept options, using maintenance, cost and environmental factors as the main criteria and as resulting benefit cost ration. Calibrated data had been used against real data to the best of abilities to predict what would happen over the next 100 years, although an adaptive approach would be required over time. Based on the appraisal, option 3, 1 120m rock groyne was the preferred lowest cost option for EDDC. It was noted that all of the options offered the same level of flood prevention. The method of construction and delivery of materials would be left to contractors to determine in their tender document, in order to get the best value for money. Costings so far indicated that sea delivery of materials would be the cheapest option.

The environmental objective from the BMP was that it did not compromise or adversely impact the integrity of the environmental features of the Dorset and East Devon UNESCO World Heritage Site, Sidmouth to West Bay Special Area of Conservation or the Sidmouth to Beer Coast Site of Special Scientific Interest. Technical assessments were also linked to other consents such as Water Framework Directive compliance and Habitats Regulations Assessment. It was acknowledged that any scheme would have some inevitable effects in

localised areas of the beach, but that the aim of scheme was to prevent Sidmouth from flooding. The scheme would not significantly interfere with any natural coastal erosion.

The outline design of option 3, 1 x 120 rock groyne would include (and would be further refined in the subsequent detailed design):

- Rationalisation of beach profiles and rock groyne design.
- Visualisations of the splash wall and east beach.

The group discussed the splash wall, which was proposed to be 600mm higher than the current splash wall. There were concerns about the splash wall, although it was acknowledged that an impact assessment had established the need for a raised wall to fulfil flood defences for potentially the next 100 years. It was hoped that the wall would have as little visual impact as possible, whilst fulfilling its requirements. The 600mm height increase would not make a difference to the views from the road and could be made to look more attractive, with various design details to be considered at detailed design phase, such as creating a stepped wall that people could use as seating. A raised wall also had a positive road safety aspect in that people would not be able to step over it, directly into the road, as they currently did.

The group were shown some visual images of the beach before and after the construction of the preferred option. They also noted the financial summary, which was:

- Present Value Design and Construction Costs: £8.9M
- Present Value Post Construction Costs (maintenance): £4.7M
- Present Value Total Scheme Cost: £13.6M
- EA Partnership Funding Score: 59%
- Flood Defence Grant in Aid: £5.2M
- EDDC Contributions Required: £3.7M

Next stages were:

- 2018
  - Undertake detailed review of financial risk within scheme costs.
  - Review financial requirements with the Environment Agency.
  - Secure Partnership Funding.
- 2019
  - Formal submission of Outline Business Case.
  - Detailed design.
  - Preparation and submission of Planning Application and other licences and consent applications.
- 2020
  - Construction phase.

It was noted that construction was likely to take 36 weeks to complete. The timing of works would need to be considered due to restrictive access to the

beach and promenade. There would be no seasonal restrictions to the work due to the tidal nature of the works, but the tourism impact would be assessed.

The Group agreed that there was a lot of misinformation about the splash wall and that information should be provided to convince the local community that an increase in splash wall height was necessary and an opportunity to improve the appearance of the area and enhance the seafront. The Chairman stressed that the splash wall was the most sensitive issue for many in the local community and therefore work had to be done on communication to convince the public of the need for the changes.
Action: that a press release be issued to improve the current situation of messages being clouded by rumours and speculation and provide positive information about the splash wall.

4. Partnership funding

EDDC's Engineering Projects Manager explained the funding requirements for the scheme:

- Likely partnership funding of around £3M required
- Agreed £0.95M - £1.2M
  - EDDC £600k
  - DCC £250 - £500k
  - Sidmouth Town Council £100k
- Potential contributions estimated £0.25M - £1.25M
  - South West Water
  - Local Levy
  - s106 sports
  - s106 tourism
  - EDDC Housing
  - Cliff Road Residents
  - Keith Owen Fund
- Current gap £0.55M and £1.8M

It was likely that around £3m of funding would be required to top up the Environment Agency funding. Various potential funding streams were outlined and would be updated once more detailed figures were known. When the detailed scheme was drawn up and the exact funding requirements were known it may be possible to unlock funding from other avenues. Currently the indicative funding gap was between £0.55m and £1.8m.

5. **Date of next meeting**

The date of the next meeting of the Steering Group would be confirmed in due course.

Attendance list

Steering group members present:

Cllr Tom Wright (Chairman)
Cllr Geoff Pook, EDDC
Cllr Alan Dent, EDDC
Cllr Ian McKenzie-Edwards, Sidmouth Town Council
Cllr Jeff Turner, Sidmouth Town Council
Paul Griew, Cliff Road Action Group (CRAG)
John Radford, Cliff Road Action Group (CRAG)
Nick Jennings, Principal Engineer Bridges and Structures – DCC
Robert Crick, Vision Group of Sidmouth
Ed Hamson, Sid Vale Association
Cllr David Barratt, EDDC
Nick Jennings, Devon County Council
Mary Bagwell, representing Sidmouth fishermen
Sam Scriven, Jurassic Coast Trust

Officers:
Dave Turner, Engineering Project Manager, EDDC
Alethea Thompson, Democratic Services Officer

Consultants:
Alexander Lee, RHDHV
Caroline Price, RHDHV

Apologies:
John Golding, Strategic Lead – Health, Housing and Environment, EDDC
Tony Burch
Natural England
Environment Agency

Sidmouth & East Beach BMP – Project Steering Group Terms of Reference

The role of the Steering Group
The role of the Steering Group is to advise on the development and delivery of the Sidmouth & East Beach Beach Management Plan project (*the Project*) by East Devon District Council (*the Client*) and their consultants Royal Haskoning DHV (*the Consultants*) to act as a 'critical friend' throughout the project.

Responsibilities

The Steering Group will be responsible for :-

- Commenting on the aims and the objectives of the Project.
- Providing advice and guidance as appropriate to the Client on developing, delivering and monitoring the Project to ensure that it is delivered in accordance with the contract, the project plan and budget.
- Provide community input to the project, including the identification of opportunities and constraints.
- Provide advice on regulatory issues as appropriate.
- Provide appropriate documents and information to support the development and delivery of the Project.
- Providing a forum for discussion of issues and progress at high level across the different project stakeholders.
- Provide advise on key decisions about the project. Advise on project papers at different stages, as provided by the consultant.
- Provide communications and public relations support as appropriate.
- Recommending any further work required as part of the project.

Ways of working

- The Steering Group will meet a minimum of three times during the project
- Notes of the Group who attended the meeting.
- Actions will be clearly identified and progress monitored.
- Meetings will keep to the pre-agreed agenda and allocated timings as far as
- possible.
- Appropriate time will be allocated to agenda items to allow debate by all relevant Steering Group Members.
- Members may be contacted between meetings for advice should the need arise.
- From time to time sub-groups may be formed to work on specific time-limited issues as appropriate.
- From time to time individuals may be co-opted to provide specific advice and expertise as required.
- If a Steering Group Member is unable to attend a meeting he/she should make every effort to identify a substitute.

Membership
The Steering Group will comprise;

- Deputy Leader (Chair)
- Environment Portfolio Holder
- Deputy Environment Portfolio Holder
- Sidmouth Town Ward Councillors
- One additional Councillor appointed by the Council

Additionally the Group shall invite (at their discretion and when appropriate to do so);

- Members drawn from each of the project partners
- Members of the Community and affected groups

Membership of the Steering Group will last for the length of the Project.

Members of the Steering Group are expected to be actively involved in meetings and decision-making.

Advisors
Advisors exist to support the work of the Steering Group. Advisors can be drawn from organisations represented on the Steering Group or from external experts with relevant knowledge of the issues surrounding the project. Advisors can be called on by the Steering group as and when required.

Sidmouth Beach Management Scheme

Outline Business Case

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BUSINESS CASE APPROVAL SHEET

1 Review & Technical Approval

Project title			
Authority project reference		EA reference	
Lead authority		Date of submission	
Consultant		Document stage (SOC/OBC/FBC)	
Previous document		Previous doc ref	

Job title	**Name**	**Signature**	**Date**
'I confirm that this project meets our quality assurance requirements, environmental obligations and Defra investment appraisal conditions and that all internal approvals, including member approval, have been completed and recommend we apply to the Environment Agency for capital grant and local levy in the sum of £			
Authority Project Executive			
'I have reviewed this document and confirm that it meets the current business case guidelines for local authority and Internal Drainage Board applications.'			
Business case reviewer			
'I confirm that the project is ready for assurance and that I have consulted with the Director of Business Finance'			
Area Flood & Coastal Risk Manager			

NPAS Assurance ☐ Projects £100k - £10m (Tick the appropriate box)	Large project review group ☐ Projects >£10m (LPRG)

Recommended for approval			Date
NPAS or LPRG Chair			
Project total as approved £		Version number	
Project total made up of :	Capital Grant (£k)		
	Levy (£k)		
	Other Contributions (£k)		

2 Project Financial approval

Financial scheme of approval	Project total	**Name**	**Signature**	**Date**
Director of Business Finance	All >£100k			
Director of Operations	£1m -£10m			
Executive Director of Operations	>£10m			
Chief Executive	>£20m			

3 Defra approval

Date sent to Defra (or N/A)		Version number (if different)	
Date approved by Defra (or N/A)			
Comments			

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Appendix I **Sidmouth Beach Management Scheme Outline Design**

Appendix J **Sidmouth Beach Management Scheme Cost Breakdown**

1 Business Case

1.1 Introduction

This is an Outline Business Case for the Sidmouth Beach Management scheme. The recommended scheme will improve the protection to properties and infrastructure at risk of coastal flooding and erosion over the 100-year appraisal period.

The Flood Defence Grant in Aid funding being sought is £XXXX which includes risk and inflation. East Devon District Council are contributing £XXX to the scheme in addition to the grant aid funding.

The proposed scheme in located in Sidmouth, East Devon, see Figure 1 and Figure 2. The frontage itself is approximately 1,250m in length and extends from Connaught Gardens in the west to East Beach / Pennington Point cliffs in the east (Grid Ref: SY 12633 87194), see Figure 1.2.

Figure 1: Sidmouth Beach Management Scheme Location Plan

The Sidmouth Beach Management Scheme frontage has a long history of the construction and maintenance of coastal flooding and erosion risk management schemes. Following sea storms of 1989,1990, the Sidmouth Town frontage experienced substantial damage to existing defences and substantial volumes of shingle were lost to the east of Sidmouth. This storm damage triggered the need for upgraded coastal flood and erosion risk management measures. The need for further works was triggered following storms in 1993 and 1994.

Figure 2: Sidmouth Beach Management Scheme Extent

The current flood and coastal erosion risk management measures along the Sidmouth Town frontage were constructed over many phases between 1991 and 2000 and comprise of seawalls, rock revetments, splash wall, rock groynes, offshore rock breakwaters, a river training wall / arm coupled with beach recharge and recycling as required. Wave overtopping and the subsequent risk of coastal flooding along the Sidmouth town frontage is generally controlled by the retained beach in front of the seawall and the low splash wall that is situated on the landward side of the promenade. The beach, in conjunction with the buried rock revetment, also helps to protect the seawall from undermining and subsequent potential failure. Over recent years' beach levels have dropped to lower than the design level (which was set as part of the 1990s schemes) and in places the toe of the seawall is now exposed. This results in wave reflection on the exposed vertical seawall which exacerbates wave overtopping and increases the risk of subsequent flooding. The wave reflection also exacerbates the reduction in the already low beach levels.

The East Beach frontage consists of Pennington Point cliffs which has a small shingle beach at its base. The cliffs are otherwise undefended. The Pennington Point cliffs are eroding, and thereby retreating. The cause of erosion is primarily wave impact on the lower cliff. Beach levels have lowered in recent years causing more exposure of the cliff toe to wave action. The continued erosion of the cliffs is now posing a risk of outflanking of the Sidmouth Town defences; erosion of the cliff is resulting in the gradual increased exposure of the western river wall of the River Sid to coastal sea storm conditions.

The proposed scheme has a Present Value benefit of £XXX and will protect XXX properties from coastal flooding, 5 properties from erosion whilst also slowing the erosion rate of the East Beach cliff. Slowing of the cliff erosion rate has the beneficial effect of offsetting the ultimate failure of the River Sid training wall considerably into the future.

2 The Strategic Case

2.1 Introduction

The scheme frontage lies within the administrative area of East Devon District Council who are the Risk Management Authority. The open coast frontage is owned and managed by East Devon District Council and the River Sid Western Wall is owned by the Environment Agency. South West Water maintain an outfall that extends offshore from a point adjacent to the mouth of the River Sid. Figure 3 illustrates the seaward ownership boundaries with the scheme area.

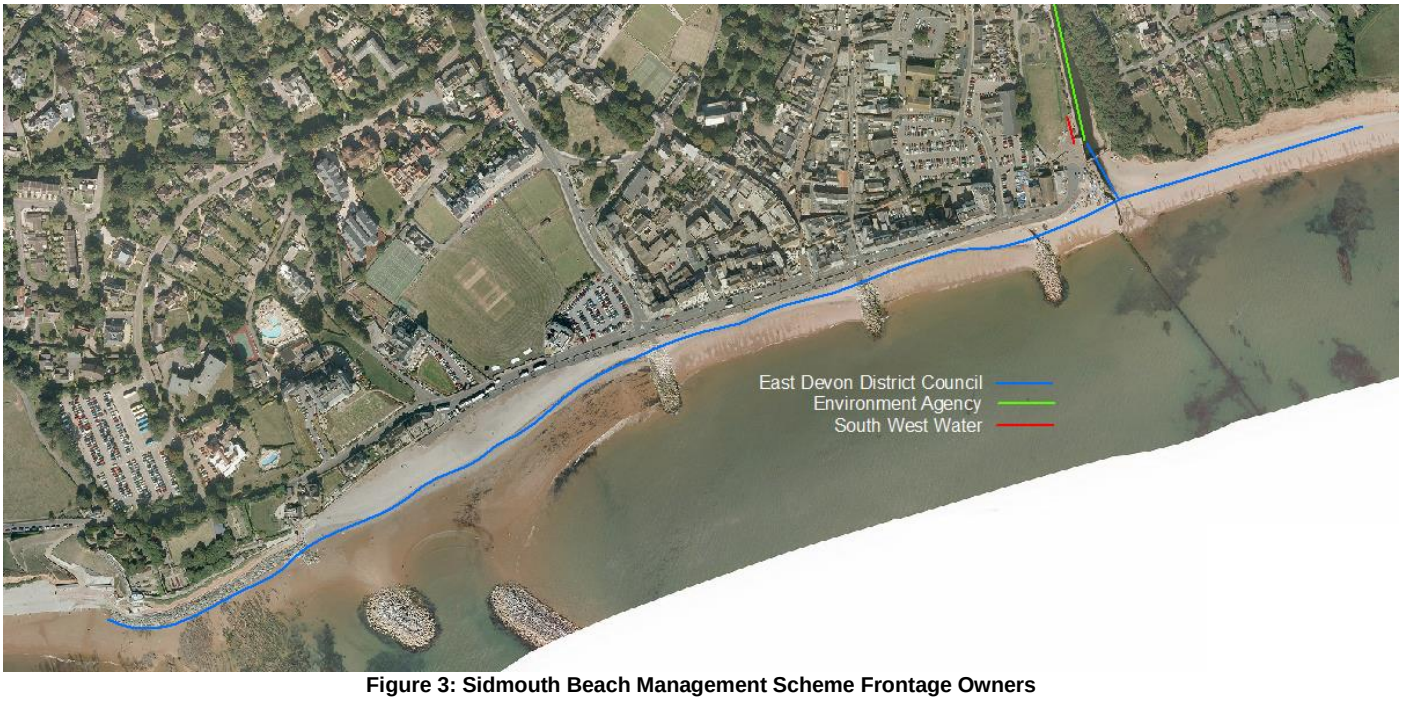

Figure 3: Sidmouth Beach Management Scheme Frontage Owners

2.2 Business strategies

The following section references and summarises the existing strategy and management documents relevant to the scheme frontage.

In terms of flooding and coastal erosion risk management (FCERM) the following has been references:

- Durlston Head to Rame Head Shoreline Management Plan, 2011.
- Sidmouth to East Beach Management Plan, 2017.

The Shoreline Management Plan provides a large-scale assessment of the risks associated with coastal evolution and presents a policy framework to address these risks to people and the developed, historic and natural environment in a sustainable manner. Below this document sits the Sidmouth and East Beach Management Plan which covers the coastline of Sidmouth. The aim of the Beach Management Plan is to inform, guide and assist East Devon District Council in managing the beach and associated coastal defences in line with the SMP recommended policy, and to ensure that the risk of coastal flooding and erosion to properties and other assets along the BMP frontage continued to be managed sustainable. This Outline Business Case is implementing the recommendations of the BMP.

Other relevant strategies noted below include:

- The East Devon New Local Plan, 2013 – 2031
- UNESCO Dorset and East Devon World Heritage Site Management Plan, 2014 - 2019
- East Devon Catchment Flood Management Plan (CFMP)
- East Devon Area of Outstanding Natural Beauty (AONB) Management Strategy 2014-2019
- Sidmouth to West Bay SAC Site Improvement Plan, 2014
- South Inshore and South Offshore Marine Plans
- South West River Basin Management Plan, 2009

Durlston Head to Rame Head Shoreline Management Plan, 2011

The Shoreline Management Plan (SMP) was adopted in June 2011. The SMP policy recommended for the Sidmouth coastline is defined by Policy Unit 6a35, 6a36 and 6a37. Table 1 summarises the SMP policies which cover the Sidmouth Beach Management Scheme and Figure 4 presents the extent of each policy unit.

Table 1: SMP Policies adopted in June 2011.

Policy Unit	Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)
6a35 – River Sid and Sidmouth (east)	Undertake **Managed Realignment** through beach management.	Undertake **Managed Realignment** through beach management.	Undertake **Managed Realignment** through beach management.
6a36 – Sidmouth	Continue to maintain existing defences under a **Hold the Line** policy.	Continue to maintain existing defences under a **Hold the Line** policy.	Continue to maintain existing defences under a **Hold the Line** policy.
6a37 – Chit Rocks to Picket Rock	Allow natural coastal evolution to continue through to **No Active Intervention**.	Allow natural coastal evolution to continue through to **No Active Intervention**.	Allow natural coastal evolution to continue through to **No Active Intervention**.

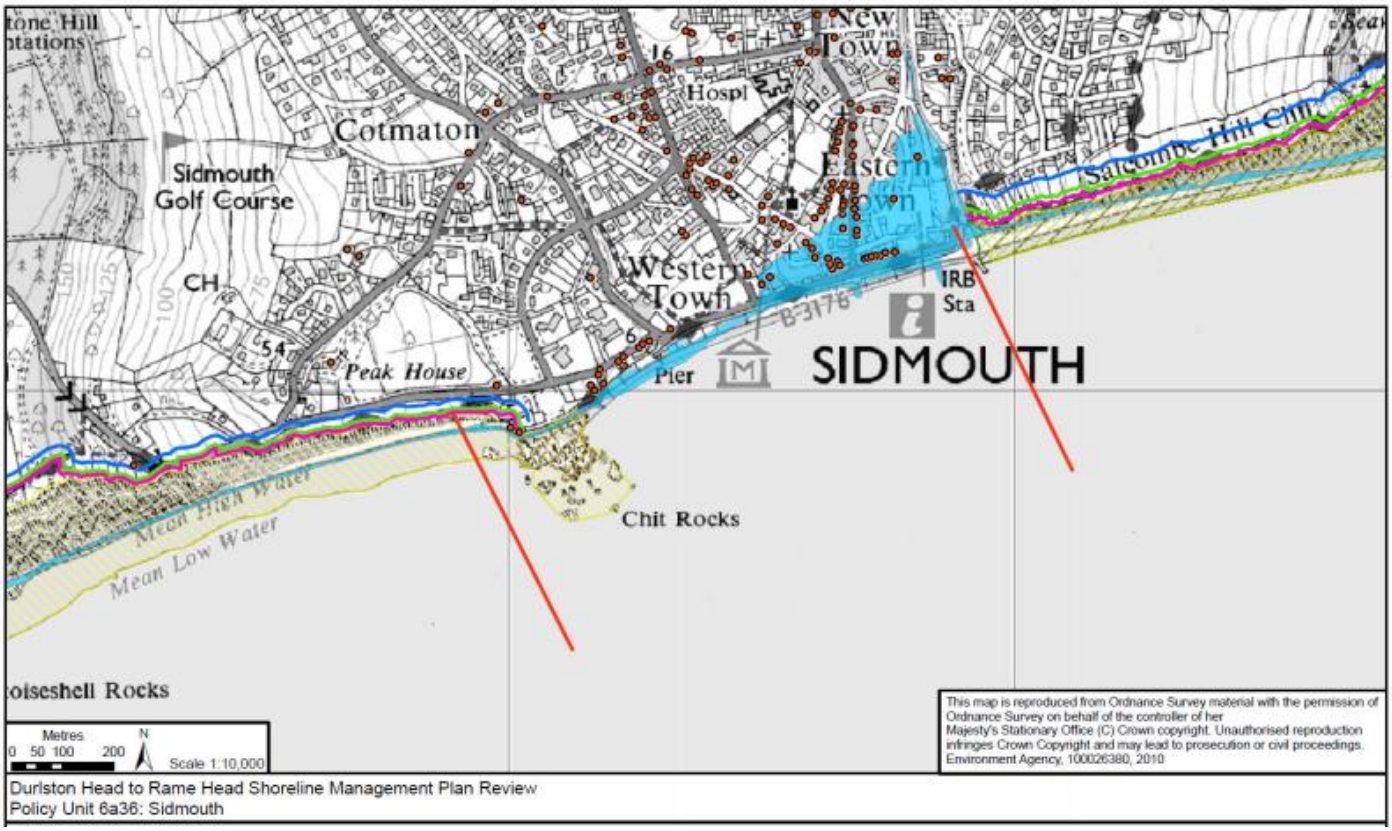

Figure 4: Durlston Head to Rame Head SMP2, Sidmouth Frontage Policy Units

Sidmouth and East Beach Management Plan, 2016

The Beach Management Plan (BMP) covers the coastline of Sidmouth in Devon from Jacob's Ladder Beach in the west to East Beach in the east, as well as the western bank of the River Sid up to the weir. The BMP informs, guides and assists the responsible authorities and organisations in managing the beach and associated hard coastal defences, and to ensure that the risks of coastal flooding and erosion to properties and other assets along the BMP frontage continues to be managed sustainably, whilst recognising and managing the environmental and amenity implications of doing so.

The key objective of the BMP is to manage the risk of coastal flooding and erosion to property and other assets along the Sidmouth frontage in the immediate future by ensuring that adequate beach is maintained along the BMP frontage, supported by (and in support of) adequate maintenance of the existing hard defence and control structures, and any future structures.

The BMP set out a plan for monitoring and intervention to maintain the beach and associated hard coastal defences to ensure they continue to provide adequate coastal flood and erosion risk management to Sidmouth.

The preferred long term management option proposed within the BMP is described as follows:

> *'to seek to construct one or two new rock groynes along East Beach over a distance of up to 200m east of the River Sid, whilst modifying the length of the seaward end of the River Sid training wall and East Pier rock groyne to improve sediment transport between Sidmouth Town beach and East Beach. This will also enable access for future beach management at East Beach. This is to be supported by repairs to the seaward end of the training wall as well as ongoing recycling of sediment along Sidmouth Town beach and maintenance of the existing defences at Jacob's Ladder Beach and Connaught Gardens (around Chit Rocks). This option was selected as it provided the best balance between technical viability, environmental acceptability and economic case.'*

The East Devon New Local Plan, 2013 – 2031

The current East Devon Local Plan was adopted on 28th January 2016. The Plan guides where development in East Devon will occur and how the great natural asset will be conserved and enhanced. Included within the Plan is a commitment to designate a Coastal Change Management Area (CCMA) at Sidmouth to manage the impact of future coastal change, though no timescale for CCMA designation is stated.

UNESCO Dorset and East Devon World Heritage Site Management Plan, 2014 - 2019

The UNESCO Dorset and East Devon Coast World Heritage Site Management Plan defines a number of aims and objectives for the long-term sustainable management of the site. The aim is 'to protect the Site's Outstanding Universal Value (OUV) and setting.' In line with this aim, the management plan sets out a range of policies covering all aspects of coastal management. The following policies are of particular relevance to the flood and coastal erosion risk management along Sidmouth:

- **Policy 1.1:** Protect the OUV of the Site through prevention of developments that might impede natural processes, or obscure the exposed geology, as set out in the GCR / SSSI details, now and in the future.
- **Policy 1.2:** Where developments affecting the Site or setting do take place, avoid or at least mitigate negative impact on the natural processes of erosion and exposed geology.
- **Policy 1.5:** Ensure that the 'South Devon and Dorset', and 'Two Bays' Shoreline Management Plans continue to take full account of the OUV of the Site and the specific geological and geomorphological features in the GCR sites when defining actions for coastal defences.

East Devon Catchment Flood Management Plan (CFMP)

The CFMP acknowledges sources of flooding from rivers in the East Devon Catchment. It describes significant tidal flooding in Sidmouth with risks to people, property and infrastructure. The plan highlights preferred risk management policies for East Devon with a recommended 'sustain the current scale of flood risk' for Sidmouth.

East Devon Area of Outstanding Natural Beauty (AONB) Management Strategy 2014-2019

The East Devon AONB management strategy contains a number of objectives and policies deriving from three main themes 1. Landscape 2. Sustainability 3. Communication and Management and 12 sub-themes. Objectives and policies relevant to the Sidmouth coastal flood and erosion risk management with sub-themes are presented below.

- **Coast** - Objective: The conservation and enhancement of the high quality and international significant coastline. Policy: (C 1) Conserve and enhance the tranquil, unspoiled and undeveloped character of the coastline and estuaries and encourage improvements to coastal sites damaged by past poor quality development or intensive recreational pressure.

- **Planning and Development** - Objective: Planning development and policy protects the special landscape character and tranquillity of the AONB and will enable appropriate forms of social and economic development that are compatible with the landscape, so conserving and enhancing the environment. (P 3) Encourage the development of guidelines and design guides to support high quality sustainable development which complements and respects the AONB landscape and historic character.

Sidmouth to West Bay SAC Site Improvement Plan, 2014

Site Improvement Plans (SIPs) have been developed by Natural England for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA).

The SIP covering the Sidmouth to West Bay SAC was published in 2014 (Natural England, 2014) and provides a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features.

It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance. This includes actions regarding inappropriate coastal management with relation to vegetated sea cliffs habitat.

South Inshore and South Offshore Marine Plans

The scheme lies within the South Inshore Marine Plan area. This Marine Plan is currently being developed by the Marine Management Organisation (MMO) in parallel to the South Offshore Marine Area. Once published and adopted, the Marine Plan will be a statutory planning document used to guide licence and consent decisions within the marine environment up to the MHW mark including beach management activities. The final South Inshore and South Offshore Marine Plans are expected to be adopted in 2016, with a six-year review period.

South West River Basin Management Plan, 2009

The South West River Basin Management Plan (Environment Agency, 2009) was prepared under the Water Framework Directive (WFD) as a product of the first of a series of six-year planning cycles. It contains actions to improve the ecological status of water bodies in river basin catchments, including coastal waters out to 1 nautical mile. The scheme lies within one such WFD Coastal Water Body and so activities need to comply with the requirements of this plan.

2.3 Environmental and other considerations

The scheme frontage contains the following environmental and conservation designations:

- Sidmouth to West Bay Area of Conservation (SAC).
- Lyme Bay to Torbay SAC.
- Dorset to East Devon Coastal United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site (the Jurassic Coast).
- Sidmouth the Beer Coast Site of Special Scientific Interest (SSSI).
- Ladram Bay to Sidmouth SSSI.

These are important in the consideration of options for beach management, with many having legislative requirements to ensure they are not adversely impacts. In addition, the scheme area is designated for its landscape setting and character with both the eastern and western ends of the scheme being within the East Devon Area of Outstanding Natural Beauty (AONB). The town of Sidmouth itself also includes several conservation areas as well as many listed buildings, a registered park and garden, and numerous non-designated archaeological sites.

Geology and Geomorphology

As outlined in the Sidmouth to East Beach Management Plan[1], the geological importance of the region is recognised by the SSSI and the UNESCO Dorset and East Devon World Heritage Site. The Sidmouth to Beer Coast SSSI is designated for its geological and biological interest. The scheme also contained two Geological Conservation Review (GCR) sites, Ladram Bay to Sidmouth (GCR 3215) and Sidmouth (GCR 814). The description of these sites underpins the SSSI and World Heritage site designations. Chit rocks to the west of the Study Area forms part of GCR 814, yielding fossilised remains of internationally rare Middle Triassic fossil fish, amphibians and reptiles. The same GCR includes the cliffs and foreshore of Pennington Point, which also yields these rare fossils. The cliffs on both side of the town lie within the UNESCO Dorset and East Devon World Heritage Site ('Jurassic Coast') designated by for their geological importance.

The Study Area comprises a section of very dynamic section of coast. Sediments are reported to input into this section of coast from contemporary terrestrial sources. There are also sediment inputs from the western end of the frontage. However, these are limited by Chit Rocks and the promontory of Connaught Gardens. This headland prevents the movement of shingle from west to east although finer grained sediment will past this boundary.

Water Quality

The Sidmouth Town water sampling point has been monitored since 1988 in line with the Bathing Water Directive, (1976) and also with the Water Framework Directive, (2003) after 2006. In 2014 the results of the water sampling at "Sidmouth Town" and "Sidmouth Jacobs Ladder" recorded a measure of 'meets higher standards'. This means that the bathing water meets the 2006 Bathing Water Directive standards.

[1] *Sidmouth and East Beach Management Plan, Final, 2017*

Ecology

The following nature conservation designations and their qualifying interest features are all within or lie in close proximity to the scheme area:

- Sidmouth to West Bay SAC (designated for Vegetated sea cliff of Atlantic and Baltic coasts and Tilio-Acerion forests of slopes, screes and ravines).
- Lyme Bay and Torbay SAC (designated for the Lyme Bay Reefs and sea caves).
- Sidmouth to Beer Coast SSSI (designated for species rich chalk grassland, broadleaved woodland and invertebrate fauna).

Fish Ecology

Cefas's Spawning and Nursery grounds of selected fish species in UK water (Ellis, J.R, et al, 2012) reported the following species that utilised the coastal water of Sidmouth for either spawning or nursing:

- *Spurdog Spulaus acanthias* **–** Low intensity nursery area
- Thornback ray *Raja clavata* **-** Low intensity nursery area
- Spotted ray *Raja montagui*- Low intensity nursery area
- Anglerfish Lophius piscatorus - Low intensity nursery area
- Sandeels *Ammodytidae* – Low intensity spawning area
- Mackeral *Scomber scombru* – High intensity nursery area
- Sole *Solea solea* **-** Low intensity spawning area

There are no Shellfish protected areas within the scheme area.

Fisheries

The scheme area is within the Southern Inshore Fisheries and Conservation Authority's (IFCA) district. There are a number of commercial fisheries working from small vessels which are launches from the beach at Sidmouth. Sidmouth also attracts recreational fishing from the beach.

Landscape

The importance of landscape to the Sidmouth area is recognised by the following:

- East Devon AONB: characterised by vast areas of heathland, small wooded combes, fertile river valleys and outstanding cliffs and hilltops and form the protection setting for the Devon and East Devon UNESCO World Heritage Site.
- The East Devon Heritage Coast: comprises vivid red sandstone cliffs that are broken by the white chalk headland at Beer and fronted by pebble beaches.
- The Sidmouth Town Centre Conservation Area: designated by East Devon District Council under the Listed Buildings and Conservation Areas Act 1990. The area includes the Esplanade from the River Sid to Connaught Gardens which contains features of historical and special architectural interest.

Archaeology and cultural heritage

The landscape character of Sidmouth is of primary importance due to its distinctive steep red cliffs that as well as being geologically important, attract and maintain high levels of tourism. The Study Area is included within several character areas which include the Blackdown National Character Area, the Sidmouth and Lyme Bay Coastal Plateau Devon Character Area, and the Sidmouth Town Conservation Area. There are no Scheduled Monuments within the Study Area although Connaught Gardens, located near Chit Rocks, is a Registered Parks and Gardens. There are over 100 listed buildings and structures within the town of Sidmouth, along the Esplanade and near to Chit Rocks.

2.4 Investment objectives

The key investment objectives are summarised below:

- To build upon the recommended option from the Sidmouth Town and East Beach BMP.
- To ensure that full environmental consideration is given to the scheme and minimal impact on the environment is achieved.

- To manage the risk of coastal flooding and erosion to property and other assets along the Sidmouth frontage in the immediate future by ensuring that an adequate beach is maintained along the scheme frontage.
- To manage the risk of coastal flood and erosion to property and other assets along the Sidmouth frontage by ensuring there is adequate maintenance of the existing hard defence / control structures and any future structures.
- Develop and implement more sustainable longer-term solutions to the management of the issues and risk posed by potential outflanking of the Sidmouth Town coastal defences as a result of ongoing erosion of the cliffs at Each Beach.
- Seek all sources of available external funding to maximise the opportunity for scheme delivery.
- Integrate wider initiatives such as regeneration and broader outcomes.

2.5 Current arrangements

Sidmouth Town Frontage

The Sidmouth Beach Management Scheme frontage has a long history of coastal flooding and erosion which has resulted in a number of coastal defence schemes over the years. The Sidmouth and East Beach Management Plan notes that records show that in 1825 timber groynes and breastwork were built, followed by the first seawall along the Sidmouth Town frontage in 1835. By the early 1990s the River Sid training wall was replaced with a structure that acted in part as a terminal groyne, and in 1957 the seawall and promenade was built along Connaught Gardens.

Following the storms of 1989 and 1990, the Sidmouth Town frontage experienced substantial damage to existing defences and substantial volumes of shingle were lost to the east of Sidmouth, Figure 5. Following this, Sidmouth experienced further storm damage in 1993 and 1994.

Timber groyne damage in 1990 | Beach lowering in 1993 | Seawall damage and erosion in 1994

Figure 5: Past storm damage along the Sidmouth Beach Management Scheme Frontage

The storm damage triggered the need for more long term coastal flooding and erosion risk management measures. The current flood and coastal erosion risk management measures along Sidmouth were constructed over many phases as follows:

- **Sidmouth Coast Protection Scheme Phase I in 1991**: works included the encasement of the exposed sections of existing seawalls, a low-level rock apron along Clifton Beach, the removal of timber groynes, securing the East Pier at its present length and encasement of the seaward end of the West Pier.

- **Emergency Works in 1993**: works included the construction of a low-level rock revetment at the foot of the seawall between West Pier and York Steps, construction of concrete access steps and repairs to the seawall.

- **Connaught Gardens Coast Protection Scheme in 1994**: works included the construction of a rock revetment in front of the seawall and the construction of a concrete apron to protect the seawall return into the adjacent bay to the west.

- **Sidmouth Coast Protection Scheme Phase II in 1995**: works included promenade resurfacing and installation of handrailing and installation of flood gates along its length, construction of a rock revetment at Clifton Beach, the removal of Glen Road groyne, the construction of two large offshore breakwaters, reinforced concrete encasement of the seawall between east pier and the river training wall, construction of three rock groynes at Clifton Beach, East Pier and York Steps and beach recharge.

- **Clifton Walkway in 1999**: works included the construction of a walkway on top of the rock revetment to provide connectivity from the seawall to esplanade.

- **Sidmouth Coast Protection Scheme Phase III in 2000**: works included the construction of a rock groyne at Bedford Steps, beach recycling from between the offshore breakwaters and Belmont Steps and beach recharge and recycling between York Steps groyne and East Pier.

Figure 6: Sidmouth's current coastal defence arrangement.

Wave overtopping and the subsequent risk of coastal flooding along the Sidmouth town frontage is generally controlled by the retained beach in front of the seawall and the low splash wall that is situated on the landward side of the promenade. The beach, in conjunction with the buried rock revetment, also helps to protect the seawall from undermining and subsequent potential failure. Over recent years' beach levels have dropped to lower than the design level (which was set as part of the 1990s schemes) and in places the toe of the seawall is now exposed. This results in wave reflection on the exposed vertical seawall which exacerbates wave overtopping and increases the risk of subsequent flooding. The wave reflection also exacerbates the reduction in the already low beach levels.

This has recently been seen during the Valentines storm in February 2014 and Storm Brian in 2017, Figure 7. These recent storms highlight the current threat to the town of Sidmouth and the importance of ensuring adequate beach levels are maintained against the seawall to reduce wave overtopping risk. Along the eastern part of the Sidmouth Town frontage between East Pier Groyne and the River Sid Training Wall beach levels are much lower than adjacent frontages and there is an even greater risk of wave overtopping. This risk is exacerbated by the presence of the river training wall which causes reflection of the waves on to the promenade and wave run-up over the concrete slipway. The threat of coastal flooding is expected to increase in the future if no further intervention is undertaken as sea levels rise.

Figure 7: Sidmouth Storm Event in February 2014 (left) and Storm Brian 2017 (centre and right)

Numerical modelling was undertaken as part of the development of the Sidmouth Beach Management scheme. The Do-Nothing numerical model outputs for a 100% AEP (1 in 1 year) and 0.5% AEP (1 in 200 year) return period storm event is presented in Figure 8 and Figure 9. The outputs from the modelling show that Sidmouth town is at very significant risk of flooding from both a south west and south east storm events.

Figure 8: Modelled Do Nothing flood risk (present day south west direction)

Figure 9: Modelled Do Nothing flood risk (present day south east direction)

East Beach Frontage

The East Beach frontage consists of Pennington Point cliffs which has a small shingle beach at its base. The cliffs are otherwise undefended. The Pennington Point cliffs are eroding, and thereby retreating. The cause of erosion is primarily wave impact on the lower cliff. Beach levels have lowered in recent years causing more exposure of the cliff toe to wave action. The continued erosion of the cliffs is now posing a risk of outflanking of the Sidmouth Town defences; erosion of the cliff is resulting in the gradual increased exposure of the western river wall of the River Sid to coastal sea storm conditions. Figure 10 illustrates the frontage and recent cliff failures.

Figure 10: East Beach Frontage current arrangement

Under a Do-Nothing scenario cliff recession is likely to accelerate as beach levels remain depleted and sea level rise increases the wave action on the cliff toe. The fluvial defences along the River Sid will become exposed to the south and south easterly waves as the cliff retreats, which they are not currently designed to withstand. This therefore increases the flood risk to the town of Sidmouth, the protection of the South West Water pumping station and the River Almer Bridge which forms part of the South West Coastal Path. In addition, the residential properties on top of the cliff will be at increased risk of being lost through erosion over the next 100 years as illustrated in Figure 11.

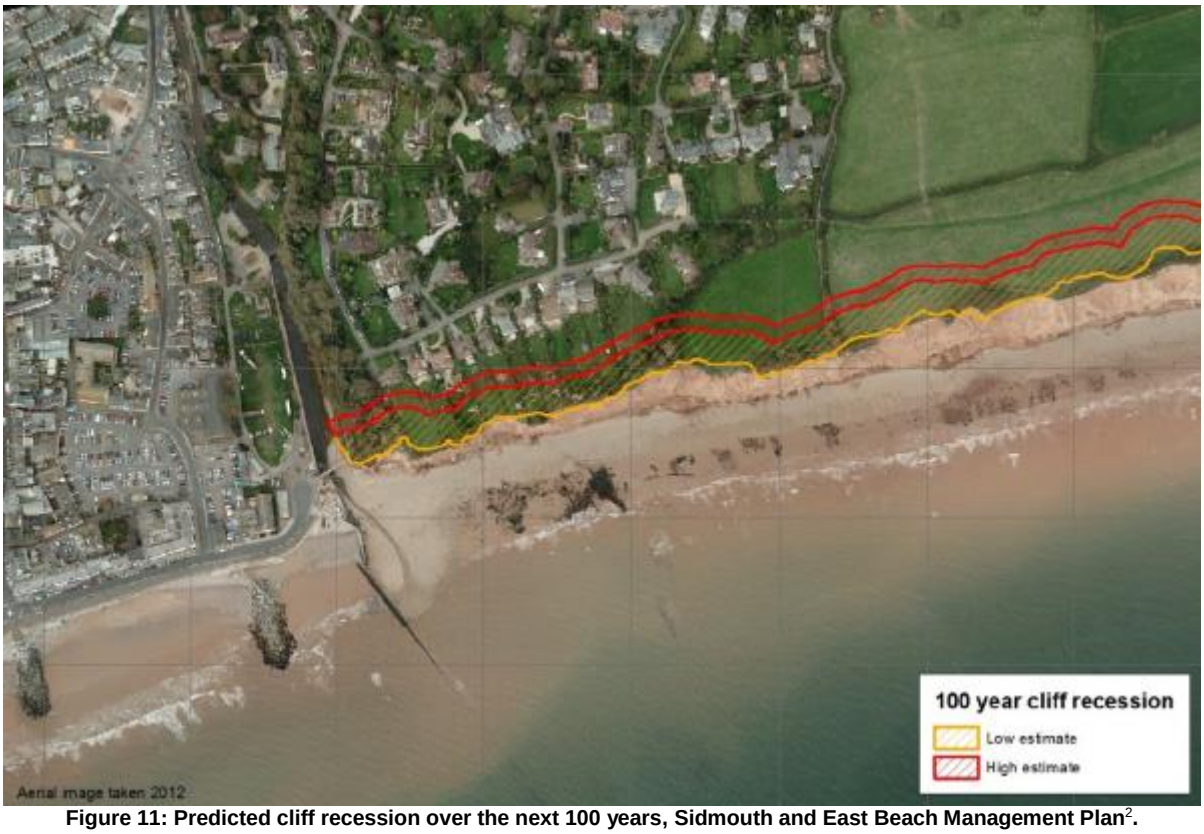

Figure 11: Predicted cliff recession over the next 100 years, Sidmouth and East Beach Management Plan[2].

2.6 Main benefits

The primary scheme benefit is that the scheme will immediately protect XX residential and XX commercial properties from coastal flooding and XXX residential properties from erosion. The scheme will also protect the South West Water Pumping Station, the River Sid training wall and the recreation and amenity value of Sidmouth.

Table 2 outlines the wider scheme benefits.

Table 2: Sidmouth Beach Management Scheme Wider Benefits

Theme	Benefit / Opportunity
Landscape	• Public access to the Sidmouth town frontage and access to the beach is highly valued by the local residents, visitors and recreational users. Maintaining access to the coastline and retaining a beach will help towards sustaining and improving recreation / amenity within Sidmouth town. • Potential to improve the landscape and public realm of The Esplanade and promenade.

[2] *Sidmouth to East Beach Management Plan, Coastal Processes Baseline Report, 2016*

	• The South West Coastal Path is present through the entire scheme area. It follows the promenade and crosses the River Sid at Alma Bridge providing an important link between residence east of the River Sid and the main town. Walkers regularly visit Sidmouth town via this route. Therefore, it is important to maintain access across the footpath. • Sidmouth seafront is also part of the National Cycle Route No.2. Therefore, it is important to maintain access to the seafront.
Environment	• Protecting East Beach cliff will prevent the loss of species currently growing on the cliffs. • Introduction of rock groynes as an option will provide hard surfaces and crevices for marine species (e.g. brown crab) and will create the potential for colonisation by macro-algae which in turn provides a food source for fish for example.
Broader Outcomes	• Potential re-development of the East Devon District Council owned land and buildings at Port Royal (behind East Pier rock groyne and along the River Sid). • Improved access to the beach between East Pier Groyne and the River Sid training wall for boat users. • Improved access to East Beach. • Improved safety along The Esplanade through construction of a splash wall with improved access to the promenade through formal flood gates.

2.7 Main risks

Table 3 highlights the key risks identified and mitigation measures undertaken. A full risk register is provided in Appendix B 'Sidmouth Beach Management Scheme Risk Register'.

Table 3: Sidmouth Beach Management Scheme Main Risks

Risk	Mitigation Measure
Insufficient data	• Review of existing data and data request at start of project. Rapid and clear communication from RHDHV to EDDC.
Buried services and UXO impacts on outline design	• Line search enquiry and high level UXO desk study undertaken during design.
Option costs exceed previous estimates	• Early Supplier Engagement has been undertaken at key stages in option development.
EIA scope not broad enough	• Early consultation with regulators to fix scope of EIA. Consultant and EDDC to communicate with regulators throughout options appraisal and development. The EIA has been completed as part of this OBC phase.
Scheme budget underestimated	• Input through Early Supplier Engagement and risk analysis.
Cost certainty	• Develop options and design using 3D model. Optimise design through Early Supplier Engagement.
Potential shortfall in FDGiA	• Communication with Environment Agency to clarify funding availability.
Adverse reaction from the local residents	• Consultation undertaken at key stages in the project. Regular communication updates. Development of a communications plan. Use of consultation feedback in option appraisal and development.

2.8 Constraints

There are a number of key constraints that needed to be considered in the appraisal as outlined in Table 4.

Table 4:Sidmouth Beach Management Scheme Constraints

Theme	Constraints
Technical	• Scheme options must be able to retain sufficient beach material and provide a long-term solution to coastal flooding and erosion risk. • Scheme options must not fully prevent erosion of East Beach cliff. However, the BMP recognised that erosion must be slowed down to prevent early failure of the western River Sid wall and outflanking of the Sidmouth Town coastal defences.
Environmental	• The area falls within: o Sidmouth to West Bay Area of Conservation (SAC). o Lyme Bay to Torbay SAC. o Dorset to East Devon Coastal United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site (the Jurassic Coast).

	○ Sidmouth the Beer Coast Site of Special Scientific Interest (SSSI). ○ Ladram Bay to Sidmouth SSSI.
Landscape	• The views and character of the local area are important to residents.

2.9 Dependencies

External contributions will be required for the scheme to fully progress to construction, something outlined during the development of the Sidmouth Town and East Beach BMP. If this funding is not secured, then construction cannot take place.

3 The Economic Case

3.1 Introduction

Options to reduce coastal flood and erosion risk have been considered in accordance with the Flood and Coastal Erosion Risk Management Appraisal Guidance (2010) (FCERM-AG) and Treasury Green Book rules (2010). As part of the development of the BMP a list of potential options were considered and assessed against technical, environmental and economic criteria. 'Non-starter' and unviable options were screened out to provide a list of potential options to assess in greater detail. A more detailed analysis and appraisal was then undertaken on the list of options and a preferred option was selected. The preferred option was then further refined to address the design and key risks, uncertainties and opportunities and this formed the Short List of Options. Appendix XX provides

Critical success factors were established for the project based on the objectives of the BMP and scheme. The critical success factors provided a means of assessing the level of success of the short-listed options. The appraisal process has been recorded through the use of Appraisal Summary Tables which can be found in Appendix C 'Sidmouth Beach Management Scheme Appraisal Summary Table'.

A flood damages numerical model was constructed to assess the economic impacts on people, properties and businesses. Whole life costs were established for each option over a 100-year appraisal period. The decision of the FCERM-AG was applied to select the preferred option.

The scheme frontage has been divided into four as illustrated in Figure 12. Each frontage has distinct existing physical characteristics and constraints. Options that may suit one frontage may not be relevant to others. In appraising the 'Do Something' options, comparison is made to the baseline of 'Do Nothing'.

Figure 12: Sidmouth Beach Management Scheme Location Plan

3.2 Critical success factors

The scheme options were appraised against a number of technical, economic, environmental and social criteria. The critical success factors for this scheme are detailed in Table 5.

Table 5: Critical Success Factors

No	Critical Success Factor	Measurement Criteria	Importance (1-5)
1	Manage flood risk in line with policies and guidance.	Is the option in line with the SMP and BMP	1
2	Be technically robust to retain a beach and reduce the risk of wave overtopping and cliff erosion.	Is the option technically sound (i.e. able to provide the required FCRM function - and able to be implemented without unacceptably high	1

		technical risks)? Is the option adaptable to climate change?	
3	Be acceptable to key regulators.	Do regulators accept the option?	1
4	Be affordable.	Whole life costs can be funded, including construction and maintenance.	1

3.3 Long list of options

As part of the development of the BMP a list of potential options were considered and assessed against technical, environmental and economic criteria. 'Non-starter' and unviable options were screened out to provide a list of potential options to assess in greater detail. Options for each frontage were first listed and then potential in-combination options were developed. See Appendix D 'Sidmouth and East Beach Management Plan Options Appraisal Report' for full details of this process. Table 6 presented the long list of potential in-combination options.

Table 6: Long list of options

Option	Description	Benefits delivered /Issues involved	Reason for short list or rejection
S0	Do Nothing (baseline option)	• Baseline option only. Increased flood risk to Sidmouth. East cliff continues to erode and the risk of outflanking of the training wall increases over time. Properties on top of the cliff will be lost.	Short Listed (baseline only).
S1	• **Frontage A**: maintenance of seawall, promenade and rock revetment. • **Frontage B**: maintain existing defences. Repair and shorten length of both the current freestanding section of training wall and East Pier rock groyne. Undertake periodic beach recharge to maintain volumes to level of design beach. Beach recycling. Immediate repairs to the River Sid training wall. • **Frontage C**: Construct 1 or 2 new groynes 150-200m east of the River Sid to aid beach levels. Supported by periodic beach recycling within Frontage B. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.	• **Frontage A**: Ensures continued effectiveness of defence**.** • **Frontage B**: Ensures SoP is provided to seafront. Beach levels are maintained. • **Frontage C**: Cliff erosion reduced as beach levels are maintained. • **Frontage D**: Ensures continued effectiveness of wall. All options meet SMP policy objectives.	Short Listed. Option provides the best balance between technical, environmental and economic impacts.
S2	• **Frontage A**: maintenance of seawall, promenade and rock revetment. • **Frontage B**: Modify existing Bedford Steps, York Steps and East Pier rock groynes to make 'T-head' type groynes to retain sediment in small stable bays between each groyne bay and shortening East Pier groyne in the process. Support with periodic beach recycling and/or recharge to retain volume to give required design beach. Repair/replace training wall and shorten its length. Immediate repairs to the River Sid training wall. • **Frontage C**: Construct 1 or 2 new groynes 150-200m east of the River Sid to aid beach levels. Supported by periodic beach recycling within Frontage B. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.	• **Frontage A:** Ensures continued effectiveness of defence. • **Frontage B**: Ensures SoP is provided to seafront. Beach levels are maintained. • **Frontage C**: Cliff erosion reduced as beach levels are maintained. • **Frontage D**: Ensures continued effectiveness of wall. All options meet SMP policy objectives.	Rejected.
S3	• **Frontage A**: maintenance of seawall, promenade and rock revetment.	• **Frontage A**: Ensures continued effectiveness of defence.	Rejected.

Option	Description	Benefits delivered /Issues involved	Reason for short list or rejection
	• **Frontage B**: Modify existing Bedford Steps and York Steps rock groynes to make 'T-head' type groynes to retain sediment in small stable bays between each groyne bay. Support with periodic beach recycling and/or recharge to retain volume to give required design beach. Remove East Pier rock groyne and training wall and place rock-armour around seawall where it curves into the River Sid. Immediate repairs to the River Sid training wall. • **Frontage C**: Construct 1 or 2 new groynes 150-200m east of the River Sid to aid beach levels. Supported by periodic beach recycling within Frontage B. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.	• **Frontage B**: Ensures SoP is provided to seafront. Beach levels are maintained. Allows for more transition of shingle between Frontage B and C. • **Frontage C**: Cliff erosion reduced as beach levels are maintained. • **Frontage D**: Ensures continued effectiveness of wall. All options meet SMP policy objectives.	
S4	• **Frontage A**: maintenance of seawall, promenade and rock revetment. • **Frontage B**: Remove existing beach structures and construct new offshore breakwaters. Immediate repairs to the River Sid training wall. • **Frontage C**: Construction of new offshore breakwaters tapering towards the eastern end of the study areas. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.	• **Frontage A**: Ensures continued effectiveness of defence. • **Frontage B**: Ensures SoP is provided to seafront. Beach levels are maintained. Allows for more transition of shingle between Frontage B and C. Uncertainty on design and performance compared to other options. • **Frontage C**: Cliff erosion reduced as beach levels are maintained. Allows for more transition of shingle between Frontage B and C. Uncertainty on design and performance compared to other options. • **Frontage D**: Ensures continued effectiveness of wall. All options meet SMP policy objectives.	Rejected.

3.4 Short list of options

Overview

A more detailed analysis and appraisal was undertaken on the 'Do Nothing' Option, and Option S1, the shortlisted preferred option identified within the BMP, for Sidmouth. In accordance with the recommendations of the BMP a series of sub-options / permutations of Option S1 were developed and appraised. These are summarised in the following table as Option 1 to Option 5. The key differentiating elements of Option 1 to 5 are the proposed groyne works to Frontage C and, as a result, the necessary predicted future beach management associated with each option.

Table 7: Short list of options

Option	Description
Option 0	Do Nothing (baseline option)
Option 1	• **Frontage A**: maintenance of seawall, promenade and rock revetment. • **Frontage B**: maintain existing defences. Repair and shorten length of the current freestanding section of training wall. Undertake periodic beach recharge and recycling to maintain volumes to level of design beach. Beach recycling. Immediate repairs to the River Sid training wall. Raise existing splash wall and install flood gates. Construction of maintenance and boat user ramp. • **Frontage C**: Construct 1no. rock groyne ~80m in length east of the River Sid. This will control beach levels and will be supported by periodic beach recycling and recharge. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.

Option	Description
Option 2	• **Frontage A**: maintenance of seawall, promenade and rock revetment. Periodic removal of shingle from Jacob's Ladder Beach promenade area. • Frontage B: maintain existing defences. Repair and shorten length of the current freestanding section of training wall. Undertake periodic beach recharge and recycling to maintain volumes to level of design beach. Beach recycling. Immediate repairs to the River Sid training wall. Raise existing splash wall and install flood gates. • **Frontage C**: Construct 2no. rock groynes ~80m in length east of the Frontage D River Sid This will control beach levels and will be supported by periodic beach recycling and recharge. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.
Option 3	• **Frontage A**: maintenance of seawall, promenade and rock revetment. Periodic removal of shingle from Jacob's Ladder Beach promenade area. • **Frontage B**: maintain existing defences. Repair and shorten length of the current freestanding section of training wall. Undertake periodic beach recharge and recycling to maintain volumes to level of design beach. Beach recycling. Immediate repairs to the River Sid training wall. Raise existing splash wall and install flood gates. • **Frontage C**: Construct 1no. rock groyne ~120m in length east of the Frontage D River Sid. This will control beach levels and will be supported by periodic beach recycling and recharge. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.
Option 4	• **Frontage A**: maintenance of seawall, promenade and rock revetment. Periodic removal of shingle from Jacob's Ladder Beach promenade area. • **Frontage B**: maintain existing defences. Repair and shorten length of the current freestanding section of training wall. Undertake periodic beach recharge and recycling to maintain volumes to level of design beach. Beach recycling. Immediate repairs to the River Sid training wall. Raise existing splash wall and install flood gates. • **Frontage C**: Construct 1no. rock groyne ~80m in length and 1no. rock groyne ~120m in length east of the Frontage D River Sid. This will control beach levels and will be supported by periodic beach recycling and recharge. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.
Option 5	• **Frontage A**: maintenance of seawall, promenade and rock revetment. Periodic removal of shingle from Jacob's Ladder Beach promenade area. • **Frontage B**: maintain existing defences. Repair and shorten length of the current freestanding section of training wall. Undertake periodic beach recharge and recycling to maintain volumes to level of design beach. Beach recycling. Immediate repairs to the River Sid training wall. Raise existing splash wall and install flood gates. • **Frontage C**: Construct 2no. rock groynes ~120m in length east of the River Sid. This will control beach levels and will be supported by periodic beach recycling and recharge. • **Frontage D**: Maintenance for as long as economically viable followed by replacement.

Technical assessment

A full technical appraisal was undertaken on each of the short-listed options and is summarised in Table 8. Full details of this can be found in Appendix C 'Sidmouth Beach Management Scheme Appraisal Summary Table' and Appendix E 'Sidmouth Beach Management Scheme – Numerical Modelling'. As the only differences between each Options 1 to 5 are the proposed works to Frontage C, and the associated beach management works, only the summary of the Technical Assessment for the Frontage C works are presented below for clarity.

Table 8: Technical assessment of short listed options

Option	Technical assessment
Option 0	• None.
Option 1	• **Frontage C**: Option will hold sufficient beach material to provide protection to cliff toe. However, beach will be at very high risk of drawn-down / erosion under sea storm conditions.
Option 2	• **Frontage C**: Option will hold sufficient beach material to provide protection to cliff toe. However, beach will be at high risk of drawn-down / erosion under sea storm conditions.
Option 3	• **Frontage C**: Option will hold sufficient beach material to provide protection to cliff toe. Beach will be at some risk of drawn-down / erosion under sea storm conditions.
Option 4	• **Frontage C**: Option will hold sufficient beach material to provide protection to cliff toe. Beach will be at low risk of drawn-down / erosion under sea storm conditions.

Option	Technical assessment
Option 5	• **Frontage C: Option will hold sufficient beach material to provide protection to cliff toe. Beach will be at very low risk of drawn-down / erosion under sea storm conditions.**

Environmental assessment

A full environmental appraisal was undertaken on each of the short-listed options and is summarised in Table 9. Full details of this can be found in Appendix C 'Sidmouth Beach Management Scheme Appraisal Summary Table'.

Table 9: Environmental assessment of short listed options

Key positive effects	Key negative effects	Mitigation or enhancement opportunity
Option X		
Option Y		

3.5 Economic appraisal

The economic benefits have been calculated using the Flood and Coastal Risk Management Handbook for Economic Appraisal (2017) and include property damage (residential and commercial), vehicle damage, emergency service costs, evacuation costs, health, risk to life, road damages and amenity benefits. The appraisal period for this scheme is 100 years. Damages have been discounted in accordance with the recommendations of the HM Treasury Green Book to provide present value (PV) damages.

Annual Average Damages (AADs) have been calculated for 100, 10, 5, 2, 1.33, 1, 0.5 and 0.1% Annual Exceedance Events for both a Do Nothing and Do Something option. Full details on the methodology used in the economic appraisal can be found in Appendix F 'Sidmouth Beach Management Scheme Flood Risk Damage Methodology'.

Table 10 presents the contribution to outcome measures of the short-listed options. All options provide the same standard of protection and therefore the same OM1 benefit and OM2 contributions.

Table 10: Contributions to outcome measures

Contributions to outcome measures	
Outcome 1 − Ratio of whole-life benefits to costs	
Present value benefits (£)	£137,880,412
Present value costs (£)	
Option 1	£18,418,627
Option 2	£16,787,661
Option 3	£13,264,837
Option 4	£13,389,202
Option 5	£14,137,381
Benefit: cost ratio	
Option 1	7.49
Option 2	8.21
Option 3	10.39
Option 4	10.30
Option 5	9.75
Outcome 2 − Households at reduced risk	
2a – Households moved to a lower risk category (number – nr)	76

Contributions to outcome measures	
2b – Households moved from very significant or significant risk to moderate or low risk (nr)	76
2c – Proportion of households in 2b that are in the 20% most deprived areas (nr)	0
Outcome 3 – Households with reduced risk of erosion	
3a – Households with reduced risk of erosion (nr)	5
3b – Proportion of those in 3 protected from loss within 20 years (nr)	0
3c – Proportion of households in 3b that are in the 20% most deprived areas (nr)	0
Outcome 4 – Water framework directive	
4a – Hectares of water-dependent habitat created or improved (ha)	0
4b – Hectares of intertidal habitat created (ha)	0
4c – Kilometres of river protected (km)	0

Cost

Option cost estimates were developed as part of the appraisal process. Cost estimates took into consideration staff costs, external fees, construction and site costs, environmental considerations, optimum bias (40%) and maintenance costs over the 100-year appraisal period. Prices were developed in consultation with a competent coastal contractor, who are on the Environment Agency WEM Framework, to ensure robustness in the appraisal process. An optimism bias of 40% was used, rather than the 'standard' higher value of 60%, following assessment of the risk of change and the identification that key elements of the construction were of lower risk than other FCERM schemes. Key elements that formed this assessment were:

- A large proportion of the capital costs are associated with the construction of rock groynes, or beach renourishment or recycling.
- As this is an extension to an existing groyne field and beach management scheme the existing scheme performance and drawing details gave increased confidence to:
    - The sizing and performance of the proposed groyne structures.
    - The sizing and performance of the proposed beach.
- The proposed raising of the splash wall is being constructed in a landward zone, outside of the intertidal zone, which comparatively is a very controlled working environment with reduced risk of weather delay and increased confidence in construction output.

Present Values

Table 11 presents a detailed breakdown of the present value (PV) cost estimates for each short list option.

Table 11: Present Values for the short list options.

	Option 1	Option 2	Option 3	Option 4	Option 5
Existing staff costs	£20,000.00	£0.00	£0.00	£0.00	£0.00
Further staff costs	£500,000.00	£100,000.00	£100,000.00	£100,000.00	£100,000.00
Consultants' fees	£150,000.00	£120,000.00	£120,000.00	£120,000.00	£120,000.00
Contractors' fees	£0.00	£0.00	£0.00	£0.00	£0.00
Cost consultants' fees	£0.00	£0.00	£0.00	£0.00	£0.00
Site investigation and survey	£0.00	£0.00	£0.00	£0.00	£0.00
Construction	£5,084,774.57	£5,369,997.23	£6,184,374.09	£6,469,596.74	£7,122,511.39
Environmental mitigation	£0.00	£0.00	£0.00	£0.00	£0.00

	Option 1	Option 2	Option 3	Option 4	Option 5
Environmental enhancement	£0.00	£0.00	£0.00	£0.00	£0.00
Site supervision	£81,000.00	£81,000.00	£81,000.00	£81,000.00	£81,000.00
Land & compensation	£0.00	£0.00	£0.00	£0.00	£0.00
Optimism bias (40%)	£2,154,309.83	£2,268,398.89	£2,594,149.63	£2,708,238.70	£2,969,404.55
Other	-	-	-	-	-
Subtotal	**£7,540,084.40**	**£7,939,396.12**	**£9,079,523.72**	**£9,478,835.44**	**£10,392,915.94**
Future costs (construction and maintenance)	£8,396,919.41	£6,946,720.87	£3,616,041.52	£3,419,650.99	£3,301,149.55
Optimism bias (40%)	£3,358,767.76	£2,778,688.35	£1,446,416.61	£1,367,860.40	£1,320,459.82
Subtotal	**£11,755,687.18**	**£9,725,409.22**	**£5,062,458.12**	**£4,787,511.39**	**£4,621,609.37**
Project total (present-value) costs	**£19,295,771.57**	**£17,664,805.34**	**£14,141,981.84**	**£14,266,346.83**	**£15,014,525.31**

Option ranking and economic appraisal conclusion

A detailed breakdown of the PV damages are presented in Table 12. The PV costs, damages, benefits and benefit cost ratio for the short list options are presented in Table 13 against the baseline 'Do Nothing' scenario for the 100-year appraisal period. The incremental benefit cost ratio was not required as the preferred option has been recommended from the Beach Management Plan.

Table 12: PV Damages breakdown

	Assets	PV Damage Do Nothing Scenario	PV Damage Do Something Scenario	PV Benefit
Flood damages	Direct Property Damage (Non-Residential)	£12,186,473	£246,844	£11,939,629
	Direct Property Damage (Residential)	£22,762,184	£302,983	£22,459,201
	Direct Vehicle Damage*	£5,223,947	£26,118	£5,197,829
	Indirect Emergency Services Cost	£1,465,020	£30,789	£1,434,231
	Indirect Evacuation Cost	£2,810,115	£26,924	£2,783,191
	Intangible Health Benefit	£1,076,668	£497,355	£579,313
	Damage to Road Surface	£22,534,142	£211,095	£22,323,047
	Risk to Life	£24,575,781	£270,654	£24,305,127
	Total PV Damages	**£92,634,330**	**£1,365,918**	**£91,268,412**

*Damages reduction by 25% in line with MCM guidance.
**PV gain over 100 year of £15M on top of avoiding the loss of £31M.

In addition to the damages calculated above, the amenity and recreation damages were calculated within the Sidmouth and East BMP to provide the potential level of amenity benefits that would be realised along the Sidmouth frontage. The potential PV losses from visitors to the Sidmouth seafront under a 'Do Nothing' scenario were the existing coastal defences allowed to deteriorate and fail is calculated at £31,431,000 over 100 years. If defences are maintained / improved there is a Present Value gain over 100 years of £15,181,000 on top of avoiding the loss of £31,431,000. Therefore, the total Present Value benefit over 100 years is £46,612,000. The Present Value costs, damages, benefits and benefit cost ratio for the short list options including this is presented in Table 14

Table 13: Short list option PV cost, damages and benefits, and benefit cost ratio (without amenity benefits).

Option		Present Value costs	Present Value damages	Present Value benefits	Average benefit: cost ratio (BCR)	Incremental benefit: cost ratio (IBCR)	Option for incremental calculation
0	Do Nothing (baseline)	£0	£92,634,330	N/A	N/A	N/A	N/A
1	Construct 1no. rock groyne ~80m in length	£19,295,771	£1,365,918	£91,268,412	4.73	N/A	N/A
2	Frontage C: Construct 2no. rock groynes ~80m in length	£17,664,805	£1,365,918	£91,268,412	5.17	N/A	N/A
3	Frontage C: Construct 1no. rock groyne ~120m in length	£14,141,981	£1,365,918	£91,268,412	6.45	N/A	N/A
4	Frontage C: Construct 1no. rock groyne ~80m in length	£14,266,346	£1,365,918	£91,268,412	6.40	N/A	N/A
5	Frontage C: Construct 2no. rock groynes ~120m in length	£15,014,525	£1,365,918	£91,268,412	6.08	N/A	N/A

Table 14: Short list option PV cost, damages and benefits, and benefit cost ratio (with amenity benefits).

Option	Present Value costs	Present Value damages	Present Value benefits	Present Value Amenity benefit	Prevent Value Total benefit	Average benefit: cost ratio (BCR)	Incremental benefit: cost ratio (IBCR)	Option for incremental calculation
Option 0 (baseline)	£0	£124,065,330	N/A	N/A	N/A	N/A	N/A	N/A
Option 1	£19,295,771	£1,365,918	£122,699,412	£15,181,000	£137,880,412	7.15	N/A	N/A
Option 2	£17,664,805	£1,365,918	£122,699,412	£15,181,000	£137,880,412	7.81	N/A	N/A
Option 3	£14,141,981	£1,365,918	£122,699,412	£15,181,000	£137,880,412	9.75	N/A	N/A
Option 4	£14,266,346	£1,365,918	£122,699,412	£15,181,000	£137,880,412	9.66	N/A	N/A
Option 5	£15,014,525	£1,365,918	£122,699,412	£15,181,000	£137,880,412	9.18	N/A	N/A

3.6 Preferred way forward

Table 15: Preferred option ranking

Option	Damage (PVd)	Damage avoided	Benefits (PVb)
Option 3	£1,365,918	£122,699,412	£137,880,412
Option 4	£1,365,918	£122,699,412	£137,880,412
Option 5	£1,365,918	£122,699,412	£137,880,412
Option 2	£1,365,918	£122,699,412	£137,880,412
Option 1	£1,365,918	£122,699,412	£137,880,412

The preferred option is Option 3 as it gives the highest Benefit Cost Ratio. A full description of the option is provided below and Outline Design drawings can be found in Appendix I 'Sidmouth Beach Management Scheme Outline Design.'

Frontage A: Jacob's Ladder and Connaught Gardens

Maintenance of the existing rock revetment, seawall and promenade. Work will include repacking of the existing rock revetment and localised concrete repair to areas of the existing seawall.

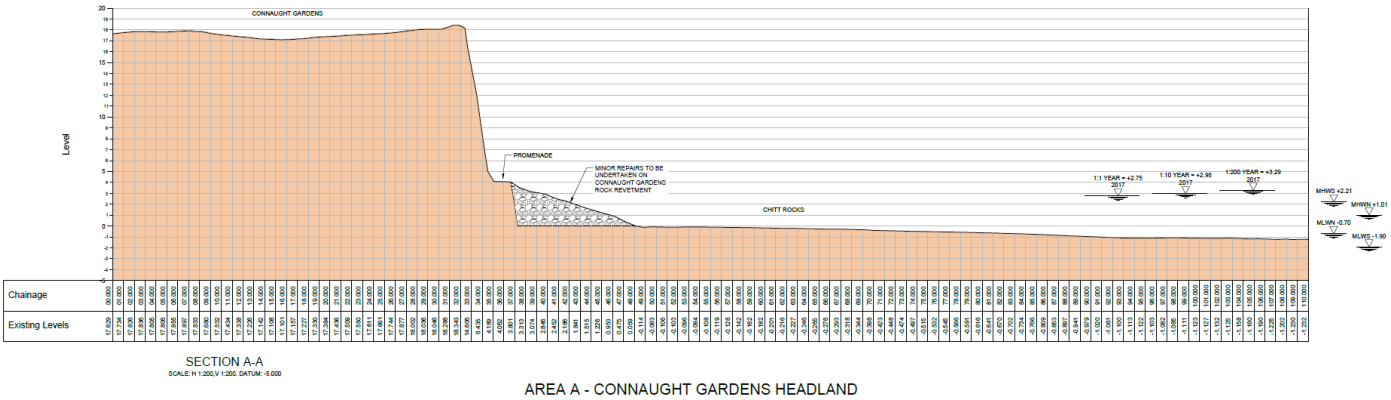

Figure 13: Frontage A preferred option

Frontage B – Sidmouth Town

The existing defences (seawall, rock groynes and nearshore rock breakwaters) will be maintained and the River Sid training wall will be repaired, with some lowering of the outer end to assist with sediment connectivity between Sidmouth Town and East Beach, whilst providing beach access for maintenance and amenity users. The Sidmouth Town beach will be recharged and graded to a +4.6mODN crest, a 10m berm with a 1 in 7 slope (known as the design beach), Figure 3.3. The easternmost groyne bay will have a reduced beach profile to provide easier beach access for amenity and maintenance access. Further details of this are provided below. Beach levels will be maintained by annual beach recycling, supported by single recharge. Sediment transport numerical modelling has indicated that recycling will be required every 4 years and recharge every 10 years. However, the actual required frequency is likely to vary in response to storminess, and the actual performance of the design beach. The frequency will therefore be adapted as part of a future monitoring plan.

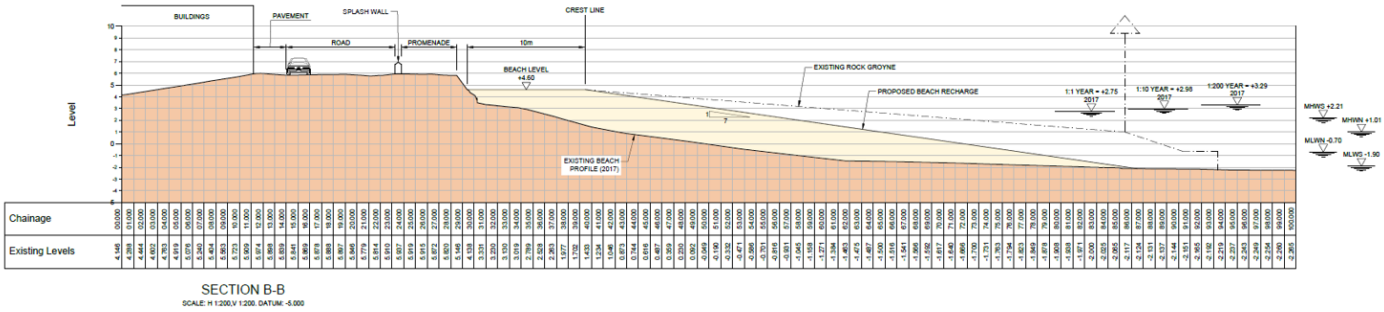

Figure 14: Sidmouth Town design beach.

The existing low splash wall which runs along the landward side of the promenade will be raised by approximately 0.6m, which is up to a final height of approximately 1.0m, to reduce the amount of wave overtopping that reaches Sidmouth Town. The splash wall behind the easternmost groyne bay will be raised to approximately 600mm in height to account for the reduced volume of beach within this bay. Works will comprise of removing the existing splash wall and construction of a new wall. Flood gates will be installed to maintain access onto the promenade, Figure 3.4.

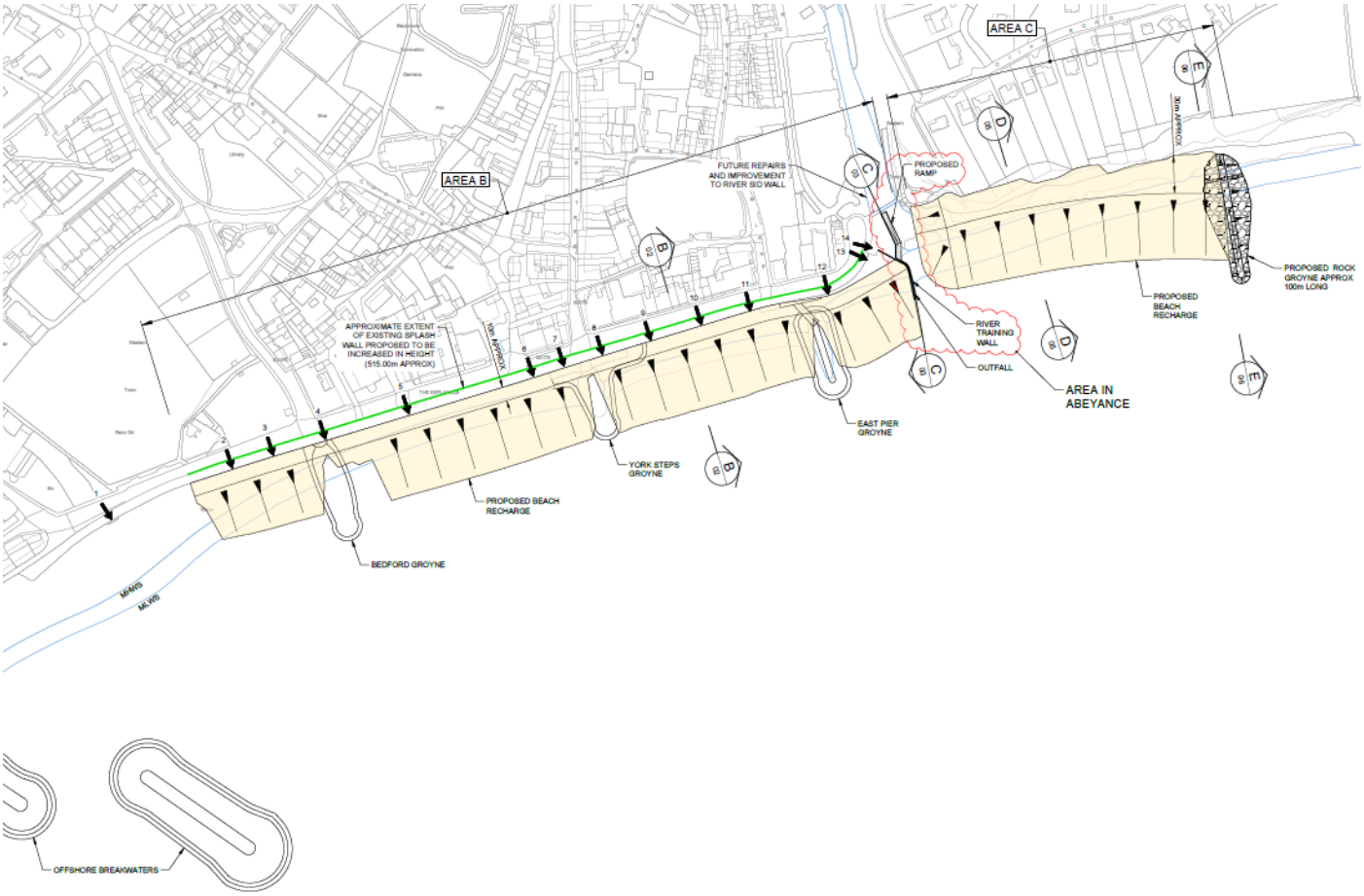

Figure 15: Existing and Proposed Splash Wall.

In addition, a maintenance access ramp will be constructed between East Pier Groyne and the River Sid training wall.

DRAWING TO BE INSERTED

Figure 16: Maintenance ramp

Frontage C – East Beach

To maintain beach levels in front of the cliff 1no. approximately 100m to 120m long rock groyne will be constructed. Initially the beach will be recharged and graded to a +4.6mODN crest, 10m wide berm with a 1 in 7 slope, Figure 3.6.

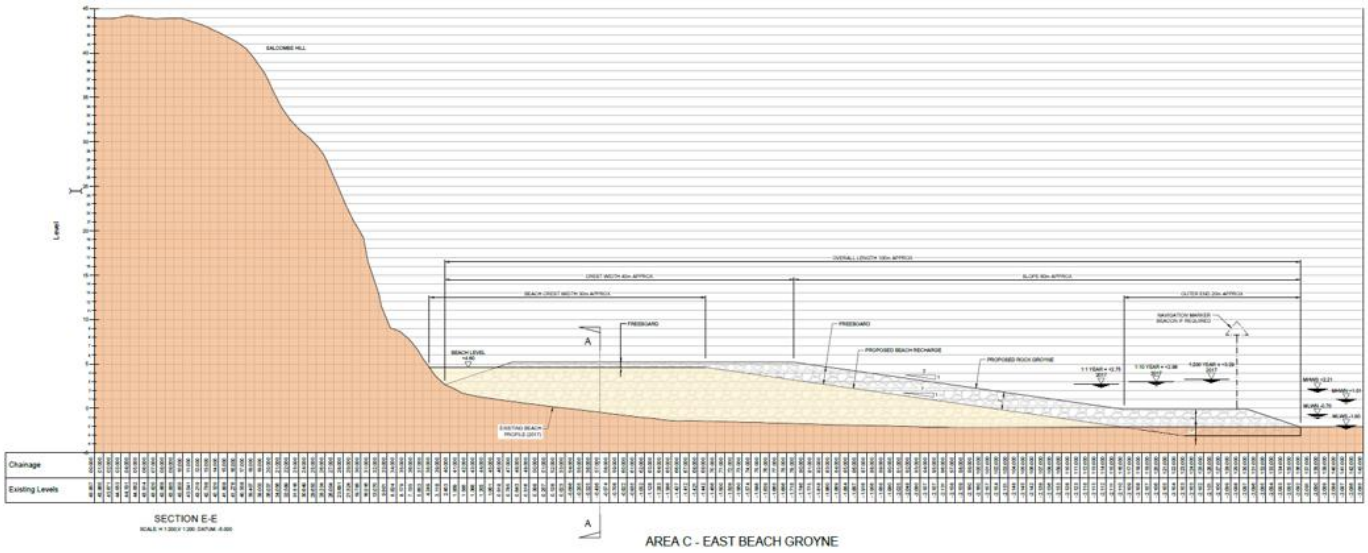

Figure 17: Cross section of rock groyne and design beach

Frontage D – River Sid Western Wall

The River Sid training wall will be maintained via concrete encasement of the inner end. The outer end will be lowered to assist with beach access.

The inland, western wall of the River Sid, which is currently protected from sea storms by the cliff, will require replacement or upgrading as the cliff continues to erode. It is anticipated that in a do-something scenario that this will occur in year 30, Figure 3.7.

Figure 18: Concrete encasement of River Sid training wall.

3.7 Sensitivity analysis

To ensure that the business case presents a robust economically justified preferred option, a number of sensitivity tests have been undertaken as outlined in Table 16.

Table 16: Sensitivity Analysis

Sensitivity Test		Raw Partnership Funding Score	BCR	BCR > 1
0	Baseline	60%	10.39	Yes

Sensitivity Test		Raw Partnership Funding Score	BCR	BCR > 1
1	Sensitivity 1 - Change in PV Whole Life Cost (25% increase)	22%	8.32	Yes
2	Sensitivity 2 – Change in OM2 – 50% of households in Very Significant (before) risk already in Significant Risk band	60%	10.39	Yes
3	Sensitivity 3 – Reduced duration of benefits by 25%	60%	10.37	Yes
4	Sensitivity 4 – Benefits reduced by 50%	31%	5.19	Yes

4 The Commercial Case

4.1 Introduction and Procurement strategy

The commercial case details the procurement strategy for the project, together with details of risk allocation and project efficiencies. It demonstrates that the preferred option for coastal defence improvements has a viable route for procurement and that a structured plan is in place for delivery.

This case sets out the approach for planning and managing the procurement of services. It also demonstrates the lead financial authorities proposed route for competitive procurement is in accordance with European Union (EU) and World Trade Organisation (WTO) rules and the current regulations in place for public sector procurements.

EDDC would procure consultant to complete detailed design, planning, and marine licensing, contactrac

Before then procuring construction of the works.with above consultant to supervise /act as ECC PM

Procurement would be undertaken with the support of Devon County Council Procurement Team in accordance with EDDC Contract Standing Orders, and the relevant UK and EU legisltation.

4.2 Key contractual terms and risk allocation

(Provide a summary of the key areas to be agreed in the contracts with external parties (e.g. contract lengths, unusual aspects or others matters to be managed). Explain the basis of apportioning risk between parties, whether related to design, construction or residual risks.)

4.3 Procurement route and timescales

(Detail the approach to be taken and method of procuring the necessary services, and any implementation milestones. Also include details of the tender assessment process and timescales.)

The preferred contracting approach for procuring the scheme is individual design commission and individual construction commission and this can be delivered through the following routes to market:

- Existing professional services contract.
- Open or restricted construction tender.

Design services

Construction services

Experience on recent schemes and lessons learned through delivery and utilising different routes to market has demonstrated a strong and experienced range of regional construction suppliers. Access through open tender has demonstrated a clear and competitive route to market. Utilising this regional experience, it is felt the route to market for construction services that represents best value for this scheme will be through open tender under OJEU, ensuring the quality based supplier status questionnaire prevents unsuitable candidates from pricing.

Key contractual terms and risk allocation

The lead contracting and financial authority for the scheme is East Devon District Council. As a basic principle risks will be contractually allocated to the party best placed to manage each risk. Risk allocation will be assessed at the point each contract is prepared between East Devon District Council and each supplier to ensure the most appropriate allocation of risk.

Form of contract - Design supplier: The design services will be undertaken under an NEC3 Professional services Contract. An Option A contract will be used.

Form of contract – Construction supplier: the construction services will be delivered under the terms of NEC3 Engineering and Construction Contract.

The preferred option for the construction services is to use an ECC Option A (Priced contract with activity schedule). Under this contract the Contractor prepares and activity schedule of all the activities he expects to carry out in providing the Works. When it has been priced by the Contractor, the lump sum for each activity is the Price to be paid

by the Employer for that activity. The total of these Prices is the Contractors Price for providing the whole of the works, including for all matters which are at the Contractor's risk.

4.4 Efficiencies and commercial issues

(Summarise the strategy, framework and plan for driving value for money, setting out what has been done to date and the opportunities going forward. Include details of efficiencies targeted in the appendix (e.g. the project efficiency register - CERT). Comment on any other commercial issues or opportunities.)

The procurement strategy selected allows for the most efficient delivery programme by using XXX. It also places risks with those parties best able to manage them effectively and efficiently.

In order to provide better value for money during the life of the scheme the project team will actively manage and record any efficiencies identified. The process of managing the efficiencies will form part of the day to day management of the project and become an integral element of the scheme.

There is a target for Risk Management Authorities to achieve efficiencies in all schemes funded by FCRM GiA. In accordance with current guidance, these efficiencies are managed using the Combined Efficiency and Recording Tool (CERT) and this process has been adopted at this early stage of the project.

5 The Financial Case

5.1 Financial summary

Table 17 presents the financial summary for the preferred option. For the development of the financial business case and Partnership Funding Calculator a 100-year appraisal period has been adopted. The cost of the preferred option following appraisal and selection was refined by an experienced contractor undertaking a detailed cost estimate of the works from the outline design. The refined costs include allowance for plant costs, overheads, material costs, labour costs and site supervision.

The Total Project Cost for approval is £xxxxx.

Table 17: Financial summary

Costs	Cost for economic appraisal (PV)	Whole-life cash cost	Total project cost (approval)
Costs to OBC:	N/a -sunk costs		Exc previous app
Existing staff costs			
Further staff costs			
Site investigation and survey			
Consultants' fees			
Contractors' fees			
Cost consultants' fees			
Subtotal			
OBC to construction:			
Existing staff costs	£0.00	£0.00	
Further staff costs	£96,618.36	£100,000.00	£100,000.00
Site investigation and survey	£0.00	£0.00	£0.00
Consultants' fees	£106,280.19	£110,000.00	£110,000.00
Contractors' fees	£0.00	£0.00	£0.00
Cost consultants' fees	£0.00	£0.00	£0.00
Other costs	£0.00	£0.00	£0.00
Subtotal	**£202,898.55**	**£210,000.00**	**£210,000.00**
Construction:			
Construction costs	£6,462,417.33	£6,922,703.00	£6,922,703.00
Inflation allowance for months			£200,758.39
Environmental enhancement	£0.00	£0.00	£0.00
Environmental mitigation	£0.00	£0.00	£0.00
Existing staff costs	£0.00	£0.00	£0.00
Further staff costs	£0.00	£0.00	£0.00
Consultants' fees	£62,608.70	£64,800.00	£64,800.00
Site supervision	£78,260.87	£81,000.00	£81,000.00
Cost consultants' fees	£0.00	£0.00	£0.00
Land purchase & compensation	£0.00	£0.00	£0.00
Other costs	0	£0.00	£0.00
Subtotal	**£6,603,286.89**	**£7,068,503.00**	**£7,269,261.39**
Risk contingency:			

Costs	Cost for economic appraisal (PV)	Whole-life cash cost	Total project cost (approval)
Optimism Bias	£2,109,711.01	£2,183,550.90	£2,180,778.42
Risk - Monte Carlo 95% or similar			£0.00
Risk - Monte Carlo 50% or similar	£0.00	0	
Future costs:			
Maintenance	£3,616,041.52	£14,101,400.00	
Future construction	£0.00	£0.00	
Optimism Bias (on future costs)	£1,084,812.45	£4,230,420.00	
Project total costs	**£13,616,750.43**	**£27,793,873.90**	**£9,660,039.80**

5.2 Funding sources

The Partnership Funding Calculator is provided in Appendix A. The Raw Partnership Funding Score is XXX% and with the required contributions from EDDC the Adjusted Partnership Funding Score is XX%. This means that XX funding for the scheme is being sought through Flood Defence Grand in Aid (FDGiA) and XXX is being sought through EDDC. Table 18 provides detailed of the funding sources.

Table 18: Funding sources

Annualised funding needs (£k)	Yr 0 2018	Yr 1 2019	Yr 2 2020	Yr 3 2021	Yr 4+	Total
Grant in Aid						
Local Levy						
Contributions (list)						
Other: (list)						
Project total costs						

5.3 Impact on revenue and balance sheet

5.4 Overall affordability

Table 19: Overall affordability

Annualised spend profile (£k)	Yr 0 20xx	Yr 1 20xx	Yr 2 20xx	Yr 3 20xx	Yr 4+	Total
Staff costs						
External fees						
Construction costs						
Environmental						
Land & compensation						
Other: (list)						
Optimism Bias						
Risk contingency						
Inflation (state rate)						
Project total costs						
Less: Costs not eligible						
Less: Contributions						
Less: Local Levy being claimed						
Capital grant claim						

Annualised spend profile (£k)	Yr 0 20xx	Yr 1 20xx	Yr 2 20xx	Yr 3 20xx	Yr 4+	Total
Grant rate						

6 The Management Case

6.1 Project management

Project structure and governance

The Sidmouth Beach Management Scheme is being managed by East Devon District Council. The project will be managed in accordance with the PRINCE2 project management principles and methodology. Governance and assurance arrangements are already in place for the project and the project Governance structure is presented in Figure 19.

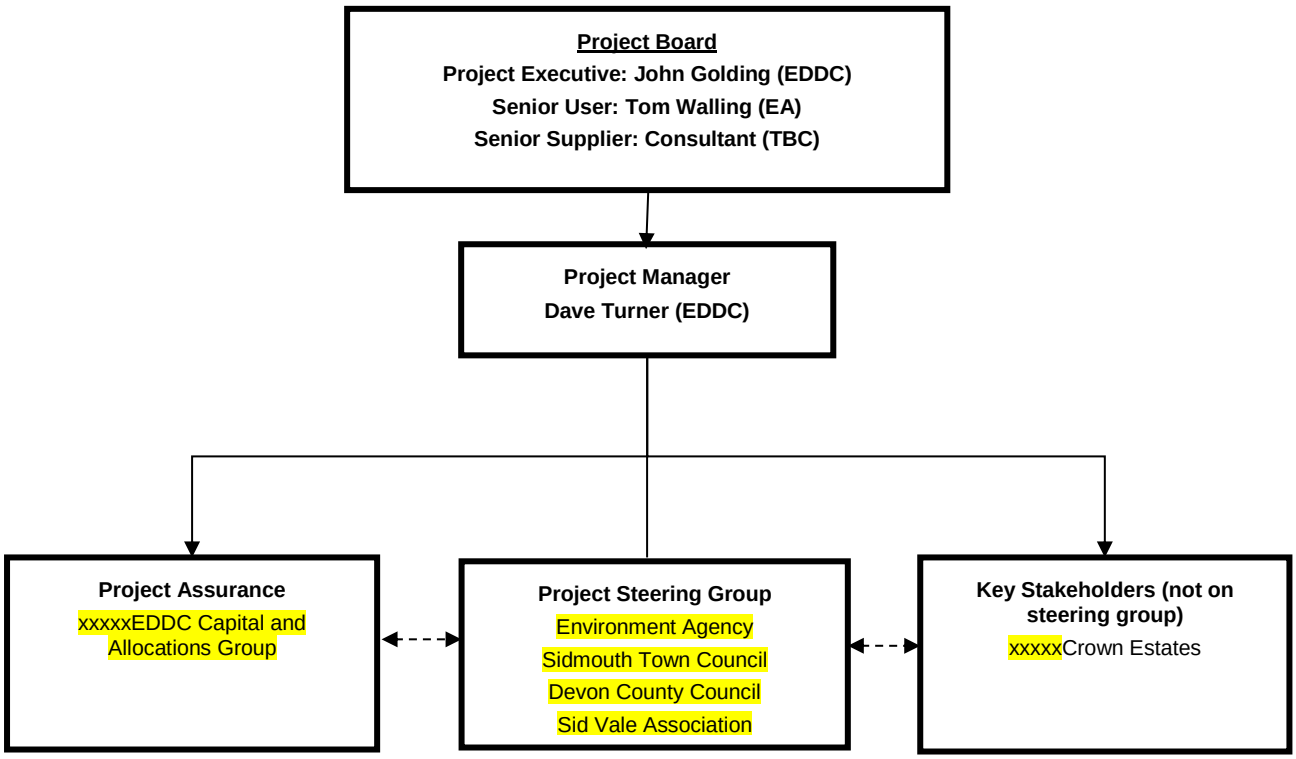

Figure 19: Project Governance structure

Project roles and responsibilities

Table 20: Roles and responsibilities

Role	Responsibility	Undertaken by
Oversight	Provide strategic direction to the project team.	Project Board
Project Executive	Chairs the Project Board and is accountable for project delivery.	John Golding (EDDC)
Project Manager	Responsible for implementing the project.	Dave Turner (EDDC)
Project Assurance	Responsible for strategic oversight of East Devon's Capital Projects	EDDC Capital Strategy and Allocation Group
Project Steering Group	Work in partnership with the project team to guide the development of technical, economical and environment sustainable options. The Project Steering Group consists of the following: • EDDC Planning Team • Marine Management Organisation (MMO) • Natural England • Environment Agency • Devon County Council, Sidmouth Town Council	

	• East Devon Area of Outstanding Natural Beauty • Jurassic Coast Team (World Heritage Site) • National Trust • South West Water	
Key Stakeholders	Work in partnership with the project team to guide the development of technical, economical and environment sustainable options. The Key Stakeholders consists of: **Statutory Consultees/ Primary Advisors** • EDDC Planning Team • Marine Management Organisation (MMO) • Natural England • Environment Agency • Cefas • Relevant Local Authorities i.e. Devon County Council, Sidmouth Town Council • East Devon Area of Outstanding Natural Beauty (AONB) • EDDC Landscape Architect • EDDC Heritage Officer • Jurassic Coast Team (World Heritage Site) • Devon Wildlife Trust **Landowners** • National Trust • South West Water • Private landowners (mostly represented on the Steering Group, see below) **Steering Group (not already included)** • Cliff Road Action Group • Sidmouth Chamber of Commerce • Vision Group for Sidmouth • Sid Vale Association • Sidmouth Sailing Club and Sea Anglers • Sidmouth Lifeboat • Local Fishermen **Other specific interest parties and site users** • East Devon Alliance (EDA) • RSPB • Local Sidmouth community (residents) • Wider public community (visitors) • Other water and beach users • Local MPs	

Project plan

The project is working through a traditional sequence of outline design followed by detailed design and construction. The key stages are outlined in the table below. The detailed project programme is available to view in Appendix H - Project Programme -.

Table 21: Sidmouth Beach Management Scheme Project Plan

Activity	Date (DD/MM/YYY)	Comment
Planning permission and all other relevant consents including Marine License received		
Other (detail as necessary)		

Activity	Date (DD/MM/YYY)	Comment
Work to be started on site		
Work substantially completed by		

6.2 Communications and Stakeholder engagement

A Stakeholder Engagement Plan has been prepared for this project. This can be found in Appendix G. This is a working document which is kept updated and managed by the Project Teams dedicated communications lead.

Continued engagement with the project Steering Group and Stakeholders has been undertake throughout the project at key stages. Communication and consultation has primarily been through meetings and associated communications. A number of public exhibitions were also held to directly engage with the wider stakeholder community.

A stakeholder mapping exercise was undertaken at the start of the project. Four groups were identified and each group was targeted in slightly different ways in recognition of their level of influence and interest with the main differences being related to:

- The means of communication with each stakeholder;
- The frequency, nature and duration of communication;
- The supporting media; and
- The relevant feedback mechanism.

Regardless of the approach used, the information being shared was meaningful and accessible. Coastal management is a complex process with highly technical design processes and assessment methods. The use of plain English, non-technical language and succinct delivery was important.

The four groups identified were as follows:

- Group 1: Statutory Consultees and Primary Advisors.
- Group 2: Steering Group.
- Group 3: Other Interest Parties.
- Group 4: Wider Public Community.

6.3 Change management

The Project Board retains accountability for the project delivery and operates within defined tolerances set out by EDDC. Any deviation from agreed tolerances will be first agreed by the Project Board.

Change management in relation to the main works contract will be managed in accordance with the identified PSC NEC3 contract. Costs and risk forecasts will be updated quarterly or after a significant change and presented to the Board.

Change management regarding FCERM GiA will be completed as required through the Environment Agency FCERM guidance in collaboration with the Environment Agency's Area Coastal Manager and its 6 Year Programme reporting.

Contract change will be managed in accordance with the NEC3 suite of contracts and administered by the project manager.

6.4 Benefits realisation

Benefits will be realised once the scheme is in place. They will be reported through and monitored by PPMT. Table 22 outlined the benefits realisation.

Table 22: Benefits Realised

Outcome Measure (OM)	Yr 1 2018	Yr 2 2019	Yr 3 2020	Yr 4 2021	Yr 5+ 2022	Total
OM2a Households moved to a lower risk category (number- nr)						
OM2b Households moved from very significant or significant risk to moderate or low (nr)						
OM2c Proportion of households in 2b that are in the 20% most deprived areas (nr)						
OM3a Households with reduced risk of erosion (nr)						
OM3b Proportion of those in 3 protected from loss within 20 years (nr)						
OM3c Proportion of households in 3b that are in the 20% most deprived areas (nr)						
OM4a Hectares of water-dependent habitat created or improved (ha)						
OM4b Hectares of intertidal habitat created (ha)						
OM4c Kilometres of river protected (km)						

6.5 Risk management

A risk register has been developed to identify and manage risks, refer to Appendix B 'Sidmouth Beach Management Scheme Risk Register'. The risk register has been used in the review of the Optimum Bias risk allowance to inform the OBC approval estimate. As the project progresses the risk register will be developed to assign risks to customer or contractor and risks will be monitored and updated with regular risk workshops. The management of risk will be undertaken by the Delivery Team with the strategic level of risk being managed by the project board. Table 6.4 outlines the high priority risks.

Table 23: High priority risks

	Key Risks	H/M/L	Owner	Mitigation
4	Scheme budget underestimated	Medium	**EDDC**	Continued input during detailed design through Early Supplier Engagement to assess risk.
6	Adverse reaction from the general public	High	**EDDC**	Consultation undertaken a key stages in the project. Regular communication updates. Develop communications plan. Use of a consultation engagement / feedback log.
7	The ability to meet the aspirations of the Steering Group	High	**EDDC**	Close engagement with steering group. Clear communication on project decisions. Supporting evidence provided to back up decision.

6.6 Contract management

As outlined in the commercial case it is proposed that NEC PSC and ECC contracts will be put in place to undertake the detailed design and construction. EDDC have extensive knowledge of drafting, procuring and administering NEC3 contracts.

6.7 Assurance

NPAS will review the project Outline Business Case as it completed the Outline Design Stage and ahead of the detailed design and construction. The project manager will continue to produce highlight reports (which will include progress, finance, risk and key issues) to the Project Board at frequent intervals (currently bimonthly). Any matters outside of the Change Authority (see Change Management section above) will need to be authorised by a member of the Project Board.

Where necessary, and as agreed with the Project Board, impartial Project Assurance will be provided by EDDCs Finance, Legal, Audit and Procurement teams. In accordance with EDDC's Constitution procurement may, subject to its contract value, be subject to separate Procurement Gateway(s). These Gateways ensure that any procurement is fair and in accordance with EU Procurement Law.

As part of the Project Assurance 'team' an independent cost consultant and/or quantity surveyor may be employed. This role, will review contractor, sub-contractor and third party estimates/costs.

6.8 Post project evaluation

At the end of the project, the Project Manager will produce:

- An 'End Project Report' that includes all End Stage Reports and confirms the handover of all products. This report will provide an update of how well the project has done against the original business case and project specific objectives.
- A 'Lessons Report' that builds on the lesson logs produced during the project. The Lessons Report documents all lessons that could be applied to other projects and integrated in to the organisations way of working (particularly to avoid any future pitfalls).
- A 'Benefits Review Plan' that reviews the delivery of the planned benefits and outcomes from the project.

6.9 Contingency plans

In the event that a coastal flood event occurs before the project is completed, then the existing already in place procedures will be followed covering flood warning, and the monitoring of flood defence assets. Professional partners (including emergency services, local authorities and the Environment Agency) will respond as dictated by their own procedures already in place; at the extreme, this may require the evacuation of residents. If failure of a defence should occur ahead of scheme implementation, any emergency works required will consider the outline design for the failure location.