

Project appraisal report  
Authority scheme reference  
CDC/11.01

National project number  
SOS005C/009A/30CA

Authority applying for a grant

Chichester District Council  
Scheme name

Selsey, Bracklesham and East Wittering  
Beach Management Plan. 2016-2021



1. Shingle Losses around Selsey Bill between 2003 and 2014 (Channel Coastal Observatory, 2014)



2. Shingle losses at East Wittering between 2004 and 2014 (Channel Coastal Observatory, 2014)



3. Overtopping at Selsey East Beach 14<sup>th</sup> December 2012



4. Breastwork failure at East Wittering as a result of undermining due to low beach levels 6<sup>th</sup> January 2014



## 1 Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>5</b>
1.1	Introduction and Background .....	5
1.2	Problem.....	6
1.3	Options Considered .....	6
1.4	Preferred Option .....	6
1.5	Recommendation.....	10
1.6	Briefing Paper .....	10
1.7	Key Plans.....	12
<b>2</b>	<b>Introduction and background .....</b>	<b>18</b>
2.1	Purpose of this Report .....	18
2.2	Background.....	18
2.3	Current Approach to Flood & Erosion Risk Management .....	23
<b>3</b>	<b>Problem definition and objectives.....</b>	<b>24</b>
3.1	Outline of the problem.....	24
3.2	Consequence of Doing Nothing .....	24
3.3	Strategic Issues .....	26
3.4	Key Constraints.....	26
3.5	Objectives .....	26
<b>4</b>	<b>Options for Managing Flood and Erosion Risks .....</b>	<b>28</b>
4.1	Potential FCERM Measures .....	28
4.2	Long List of Options .....	28
4.3	Options rejected at the preliminary stage .....	28
4.4	Options Shortlisted for Appraisal .....	28
<b>5</b>	<b>Options Appraisal and Comparison .....</b>	<b>29</b>
5.1	Technical Issues .....	29
5.2	Environmental Assessment .....	29
5.3	Social and Community Impacts .....	30
5.4	Option Costs .....	30
<b>6</b>	<b>Selection and details of the preferred option .....</b>	<b>32</b>
6.2	Sensitivity Testing .....	32
6.3	Details of the Preferred Option .....	32
<b>7</b>	<b>Implementation.....</b>	<b>35</b>
7.1	Project Planning.....	35
7.2	Delivery Risks .....	35
7.3	Please read through this form and the guidance notes that came with it. Please write clearly in the answer spaces.....	37
7.4	only .....	40

**Approval History sheet**

<b>1 Review</b>			
Project title	Selsey, Bracklesham and East Wittering Beach Management Plan yrs. 2016-2021		
Authority project code		Date of PAR	January 2016
Lead authority	Chichester District Council		
Consultant	Royal Haskoning DHV	Version number	01
Job title	Name	Signature	Date
Senior Engineer	David Lowsley		
'I have reviewed this document and confirm that this project meets our quality assurance requirements, all of the required environmental obligations and Defra investment appraisal conditions. I confirm that all internal approvals, including member approval, have been completed for this project and recommend we apply to the Environment Agency for a capital grant of £ 1,250,000			
Authority Project Executive	Alison Stevens		
'I have reviewed this document and confirm that it meets the current PAR guidelines for local authority and Internal Drainage Board applications.'			
PAR reviewer			
'I confirm that I have consulted with the Director of Business Finance and that we are ready to send the project for assurance.'			
Area Flood Risk Manager			
NPAS Assurance <input checked="" type="checkbox"/> Projects <£10m (Tick the appropriate box)	Large project review group (LPRG) <input type="checkbox"/> Projects >£10m		
Recommended for approval (Lead Assurer or NPAB Chair)		Date	Version number
Capital grant of £			
<b>2 Project approval</b>			
Financial Scheme of Delegation (FSoD approval):			
Limit	Approval		
Over £20m	Chief Executive in consultation with Executive Director of Operations and Director of Business Finance		
Up to £20m	Executive Director of Operations and Director of Business Finance		
Up to £10m	Director of Operations and Director of Business Finance		
Up to £1m	Area Manager and Director of Business Finance		
Up to £100k of combined FCERM GiA and Local Levy expenditure (and with a total project value below £1m)	Area FCRM Manager even if the project value is greater than £100k (but less than £1m) including contributions from other parties		
Name		Date	
Name		Date	
Name		Date	
<b>3 Defra approval</b>			
Date sent to Defra (or write N/A)		Version number (if different)	
Date approved by Defra (or write N/A)			
Comments			



## 1 Executive Summary

### 1.1 Introduction and Background

- 1.1.1 This application seeks FDGiA to continue the successful work that has been carried out over the past 5 years under the first tranche (2011-2016) of the Selsey, Bracklesham and East Wittering BMP and this project should be viewed as a second tranche of work required to maintain the momentum of improving beach conditions in the longer term. As with the first tranche, this project covers the open coastal frontages of Selsey and Bracklesham / East Wittering, but for the period 2016-2021. The plan excludes the low-lying Medmerry coastal frontage, which divides the two. These frontages are located on the coastline of the Manhood Peninsula, south of Chichester, between Pagham Harbour and Chichester Harbour, West Sussex (see Plan 1, Section 1.7). The Selsey coastal frontage is 5.1km long and Bracklesham / East Wittering frontage is 3.1km, giving a total BMP length of 8.2km. Many of the properties along the proposed BMP frontages are on higher land and erosion risks need to be managed. There is also the need to manage flooding risks due to areas of lower land, particularly at East Beach, Selsey. Chichester District Council (CDC) manage the Selsey and Bracklesham / East Wittering frontages, whereas the Environment Agency (EA) manage the Medmerry frontage. All these frontages are covered by the Pagham to East Head Coastal Defence Strategy (PEHCDS), which was adopted by all operating authorities in 2009.
- 1.1.2 The policy for Selsey and Bracklesham / East Wittering is 'Hold The Line – Sustain'. The preferred option established by the PEHCDS was to implement the policy by beach management. The two frontages have been grouped into the same BMP, to drive efficiencies and avoid the high costs of planning the management of each frontage separately. Efficiencies are also identified as part of this proposal by recognising the value of employing a single contractor to carry out works on a term contract basis which includes using the contractors spending power to procure materials more cheaply than would be possible by the authority alone.
- 1.1.3 The Medmerry frontage is not included in the proposed BMP as the management option here is 'Managed Realignment' and a scheme has already been completed by the EA. The BMP will continue to look in detail at the Medmerry Managed Realignment scheme to explore how the coastal processes link between this frontage and the proposed BMP frontages to ensure effective management of all three frontages together.
- 1.1.4 If a region wide BMP is instigated by the EA the Council is willing to participate and ensure that its BMP engages fully with the EA model.

#### History of Flooding and Coastal Erosion

- 1.1.5 Prior to the construction of coastal defences, Selsey and Bracklesham / East Wittering experienced significant rates of erosion. East Beach, Selsey retreated 150m between 1896 and 1956 and Bracklesham / East Wittering experienced erosion rates of between 1 and 2m per year up until the 1950s.
- 1.1.6 Since defences were built along these frontages in the 1950s, these rates have been reduced but have resulted in general lowering of the foreshore. Ongoing maintenance has extended the life of the defences well beyond the original design period. Should the defences fail the effect would be rapid and result in loss of property and amenity and would severely affect the security of the coastal communities. With a reduction in beach levels over the last decade due to complex coastal processes and a lack of shingle supply, the defences have become more exposed to wave energy and they are now at an age where failures are being experienced. For example, in 2007 a 40m section of seawall at Selsey West Beach collapsed during a 1 in 1 year storm (100% Annual Exceedance Probability). This placed 5 properties at immediate risk of collapsing, although on this occasion, CDC were able to prevent this through emergency works, later followed by permanent repairs. At Bracklesham / East Wittering, beach levels were so low in 2009 that the rear defence breastworks were undermined, resulting in 1m of erosion to the land behind within one tide, before works were undertaken to increase the depth of the breastwork planking.

## 1.2 Problem

1.2.1 Over the next 20 years there are 429 properties at flood risk and 78 properties at erosion risk over the Selsey and Bracklesham / East Wittering frontages combined. These losses are expected to begin within the next 5 years without timely intervention. Many of the assets were given a life expectancy of less than 5 years when surveyed in 2009. In 100 years, there will be at least 2,239 properties at flood risk and without intervention 1,019 properties are likely to have been lost to erosion along the Selsey and Bracklesham / East Wittering frontages.

## 1.3 Options Considered

1.3.1 Potential Flood and Coastal Erosion Risk Management (FCERM) measures were identified with the PEHCDS and included:

- No Active Intervention;
- Do Minimum;
- Hold The Existing Defence Line (Maintain, Sustain or Improve);
- Managed Realignment;
- Adaptive Management.

1.3.2 A long list of options were identified from the potential FCERM measures, which were then short-listed. Economic, technical and environmental issues were all considered as part of the option selection, as discussed in Section 4.

## 1.4 Preferred Option

### Description

1.4.1 The preferred option is a combined BMP for Selsey and Bracklesham / East Wittering to achieve the adopted PEHCDS management option of 'Hold The Line – Sustain' along these frontages. Over the next 100 years, a sequential 5-year BMP to maintain critical beach levels and maximise the life of our coast defence assets, is recommended. This will be supported by capital, major coast defence schemes approximately every 25 years to replace / increase the height of key defence assets as they come to the end of their useful lives. This achieves a positive Outcome Measure score and allows time for collection of contributions towards the larger capital schemes as explained further in Sections 5 and 6.

1.4.2 This Project Appraisal Report seeks funding for the second 5-year tranche of the BMP. If approved the BMP will be reviewed by CDC, with construction works including defence upgrading, beach recharging and beach recycling to be completed; as advised by the BMP.

### Environmental Considerations

1.4.3 Bracklesham / East Wittering beaches are nationally designated as a SSSI and this frontage, along with Selsey is adjacent to sites of international importance. The PEHCDS concluded that to 'Hold the Line – Sustain' along these frontage would not have any significant detrimental effect on the environment. Natural England provided a letter of support for the management options recommended by the PEHCDS in view of the fact that environmentally sustainable solutions have been proposed. Natural England will be consulted throughout the writing of the BMP to ensure any adverse effects to the environment are avoided / controlled.

### Benefits

1.4.4 The key benefits of the BMP are the protection of 429 properties from flooding and 78 properties from erosion over the next 5 years (with a rolling 5-year BMP until year 25 when the defences are likely to require significant capital expenditure). The project value of the assets at risk over the next 100 years totals £167,300,000, as extracted from the PEHCDS. Other benefits include the protection of the tourist economy, which is vitally important to these coastal communities.

### Costs

1.4.5 The costs of this 5-year BMP are £1,250,000. This 5-year BMP has been assessed as stage 2 of a 100 year 'Hold The Line – Sustain' management plan. The long-term management plan involves sequential 5-year BMPs over the next 100 years with major capital expenditure likely every 25 years. The 100 year present value costs of these works is £8,652,000.

**Economic summary and Outcome Measures**

1.4.6 The combined Selsey and Bracklesham / East Wittering BMP achieves an Outcome Measure of 152%. This is illustrated in Table 1.2. The proposed BMP is high priority for these frontages and funding has been allocated through the Medium Term Plan (MTP) process.

**Table 1.1 Project Costs (£k)**

	Economic Appraisal	Whole Life Cash Cost	Approval
Costs up to PAR (outline design)	Does not apply – sunk costs		
Costs after PAR			
Existing staff costs		25	
Further staff costs			
Consultants' fees		100	
Contractors' fees			
Cost consultants' fees			
Site investigation and survey			
Construction		1000	
Environmental mitigation			
Environmental enhancement			
Site supervision			
Compensation			
Risk contingency		125	
95%ile (represents x% of project FSoD approval)			
50%ile			
Inflation	Does not apply	Does not apply	
Future costs (construction + maintenance)	(PV)	(Cash)	Does not apply
Other			
Contributions Chichester District Council		0	
DEFRA (FDGIA)		1250	
Total		1250	

Table 1.2 DEFRA outcome measures and score (summarised from Appendix C Economic Report)

Contributions to outcome measures	
Outcome 1 – Ratio of whole-life benefits to costs	
Present value benefits (£ thousands)	28010
Present value costs (£ thousands)	1250
Benefit: cost ratio	22.41
Outcome 2 – Households at reduced risk (number – nr)	
2b – Households moved from very significant or significant risk to moderate or low risk (nr)	429
2c – Proportion of households in 2b that are in the 20% most deprived areas (nr)	0
Outcome 3 – Households with reduced risk of erosion (nr)	
3b – Proportion of those in 3 protected from loss within 20 years (nr)	78
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
Raw Partnership Funding score (%)	152
Non-Flood Defence Grant in Aid (FDGiA) contributions towards the scheme's whole-life costs	0
Adjusted Partnership-Funding score (%)	152

### Funding and contributions

- 1.4.7 The Council are seeking a total of £1,250,000 FDGiA over the next 5 years for this scheme. (£250K per year). The Council are exploring options including putting aside funds on an annual basis (up to £50k annually) which would be available as an external contribution in year 25, when major capital works are expected to be required. This PAR has also been written in-house, already saving a significant amount of money, compared to recruiting Consultants – which also demonstrates the Council's belief and commitment in delivering these works.
- 1.4.8 Further to this, the Council is actively seeking contributions towards future coastal defence works. Selsey Town Council are putting aside funds annually towards coastal defence works to protect Selsey from erosion and flooding. This contribution could be saved towards year 25 when major capital works are likely to be required to strengthen and heighten the sea wall, and replace ageing groynes. The BMP is essential, to extend the life of the fixed defences as far as possible, allowing a greater contribution to be collected. The Council intends to have similar discussions with East Wittering and Bracklesham in the future.

		Approved estimates (£)	Total final spending (£)	Breakdown of final spending (£)
(a)	PAR preparation	10		
	Specific to the scheme			
	Preliminary studies			
(b)	Construction work (fill in as appropriate)	1000		
	<ul style="list-style-type: none"> <li>• Authority's own or hired manual</li> </ul>			
	<ul style="list-style-type: none"> <li>• Authority's own or hired plant</li> </ul>			
	<ul style="list-style-type: none"> <li>• Materials</li> </ul>			
	<ul style="list-style-type: none"> <li>• Work carried out by contract (list contractors)</li> </ul>			
	1 To be appointed by competitive tender (framework agreement)			
(c)	Land-purchase payments (including fees) (please specify in part D)	0		
(d)	Compensation payments (including fees) (please specify in part D)	0		
(e)	Existing staff costs totally associated with	25		
	<ul style="list-style-type: none"> <li>• Design</li> </ul>			
	<ul style="list-style-type: none"> <li>• Authority's project management staff</li> </ul>			
(f)	Further staff costs totally associated with	0		
	<ul style="list-style-type: none"> <li>• Design</li> </ul>			
	<ul style="list-style-type: none"> <li>• Authority's project management staff</li> </ul>			
(g)	Professionals' and consultants' fees	90		
(h)	Contingencies	125		
(i)	Other costs (please specify)	0		
(j)	Total (j)	1250		
(k)	Less deductible contributions received or receivable			
	CDC contribution	0		
(l)	Less cost increases not approved and (please specify)			
(m)	Net spending (eligible for a grant) (j) - (k) - (l)	1250		

## Key delivery risks

Table 1.2 Risks and mitigation

Key Delivery Risk	Mitigation
Not securing FDGiA funding to progress schemes.	<ul style="list-style-type: none"> <li>Seek alternative funding sources, which may be difficult in the short term;</li> <li>If above cannot be achieved, develop Exit Strategy.</li> </ul>
Further collapses on Selsey West Beach Sea Wall	<ul style="list-style-type: none"> <li>Continued monitoring of existing defences and beach levels; general repairs made.</li> </ul>
Failure of sections of the East Wittering and Bracklesham defences (medium to high risk).	<ul style="list-style-type: none"> <li>Monitor existing defences and make necessary repairs within revenue budgets;</li> <li>Develop beach recycling/recharge to maximise standard of protection provided.</li> </ul>
Weather Conditions delaying construction activities (low risk).	<ul style="list-style-type: none"> <li>Ensure contract deals with possible delays adequately.</li> <li>5-year programme gives greater flexibility to deal with delays.</li> </ul>
Community opposition to shingle deliveries (low risk – major lorry deliveries successfully achieved throughout first tranche of BMP 2011-16).	<ul style="list-style-type: none"> <li>Consult with community throughout BMP process;</li> <li>Identify less disturbing methods and routes of supplying shingle;</li> <li>Carefully plan timing of works to avoid unsociable hours.</li> </ul>
Environmental Concerns leading to delays (low risk).	<ul style="list-style-type: none"> <li>Consult with Natural England throughout the BMP process (particularly whilst writing the BMP) to address any issues.</li> </ul>

## 1.5 Recommendation

- 1.5.1 To release £1,250,000 FDGiA funding over the next 5 years to continue the BMP at Selsey and Bracklesham / East Wittering to improve and prolong the life of existing coastal defence assets, allowing time for the planning and collection of contributions towards future capital schemes.

## 1.6 Briefing Paper

Risk management authority	Chichester District Council		Project Executive	David Lowsley	
Project title	Selsey, Bracklesham and East Wittering BMP (5yrs from 2016/17 to 2021/22)		Code	SOS005C/009A/30CA	
Consultant	Royal Haskoning DHV (economics)	Contractor	TBC	Cost consultant	N/A
The problem	Lowering beach levels combined with ageing defences resulting in increased erosion and flood risk				
Assets at risk from flooding	Residential property & loss of local tourism				
Existing standard of flood protection	Variable across frontage		Proposed standard of flood protection	1 in 75 yrs	
Description of proposed scheme	Second 5 year tranche of BMP at Selsey and Bracklesham / East Wittering to improve the standard of protection and reduce the risk of erosion to the coastal communities.				
Costs (Pvc) (100-year life)	8,652	Benefits (PVb)	£ 167,300	Average benefit:cost ratio	19.34

Form FCERM 2: Flood risk management scheme – application for grant funding

including maintenance)				(PVb/PVc)	
NPV		Incremental benefit:cost ratio	22.41	Whole-life cost £ (cash value)	
Choice of preferred option	Beach Management				
Total eligible cost of the capital grant applied for					<b>£1.25m</b>
Delivery programme	Planning approval		N/A		
	Award construction contract		Oct-Jan annually		
	Start date of construction		October 2016		
	End date of construction		March 2022		
	End of project		March 2022		
Are funds available for the delivery of this project?		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
External approvals	To be obtained before construction commences				
Partnership Funding and Outcome Measures	Contributions to Outcome Measures 1-4		OM1 : 22.41; OM2: 429; OM3 78; OM4 0		
	Raw Partnership Funding score		152		
	Adjusted score		152		

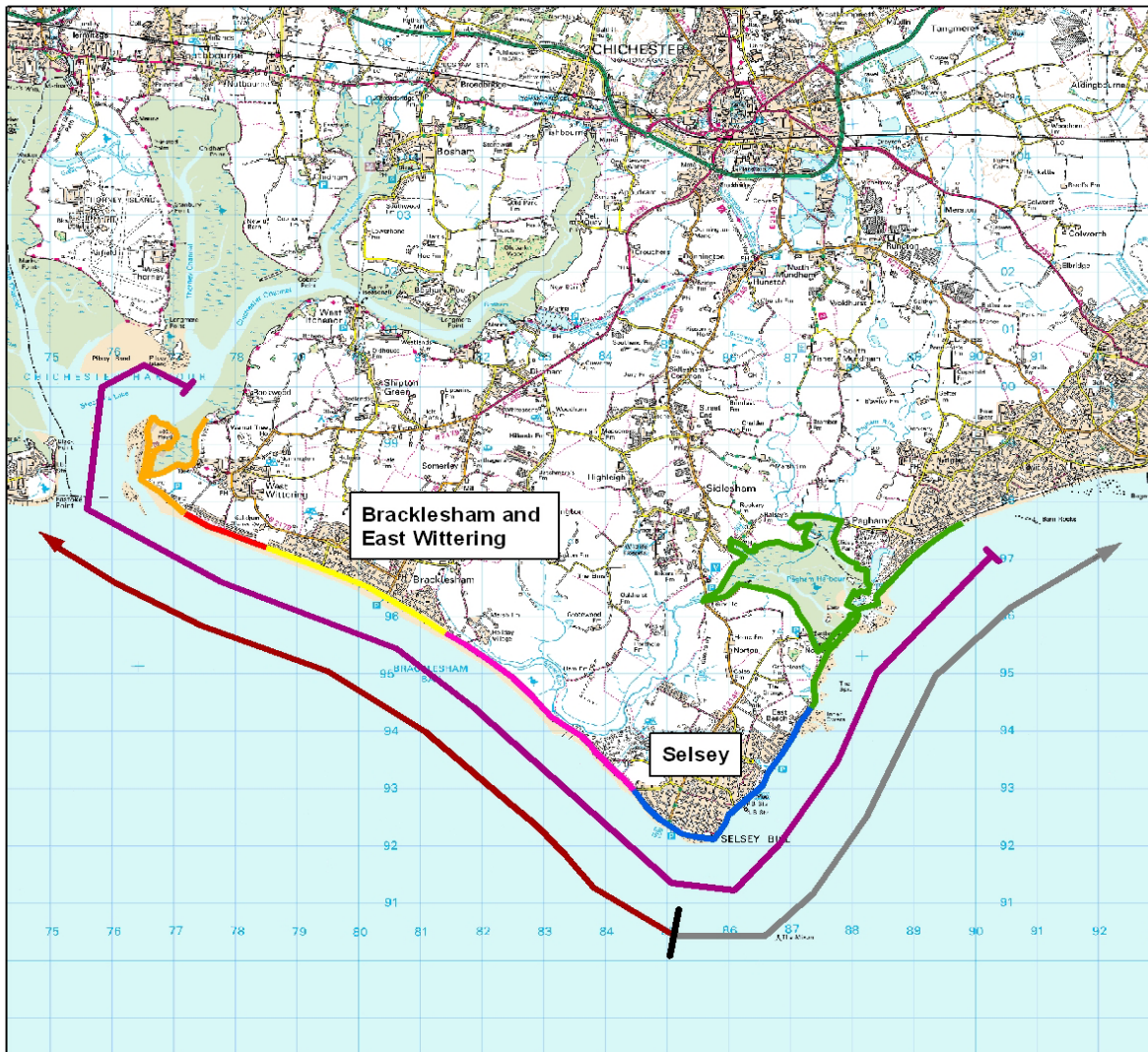


# 1.7 Key Plans

## 1.7.1 Plan 1

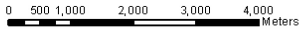


1.7.2 Plan 2



- Beachy Head to Selsey Bill SMP (2007)
- North Solent SMP (2011)
- Pagham to East Head Coastal Defence Strategy (2009)
- West Wittering Policy Unit (Adaptive Management at East Head plus improved defences for West Wittering)
- Cakeham Policy Unit (Hold the Existing Defence Line - Sustain)
- **East Wittering and Bracklesham Policy Unit (Hold the Existing Defence Line - Sustain)**
- Medmerry Policy Unit (Managed Realignment)
- **Selsey Policy Unit (Hold the Existing Defence Line - Sustain)**
- Pagham Policy Unit (Adaptive Management)

Plan 2: Strategy Frontages and SMP Boundaries  
 Location: Selsey, Bracklesham and East Wittering BMP  
 Date: 09/2011  
 Scale: 1:100,000

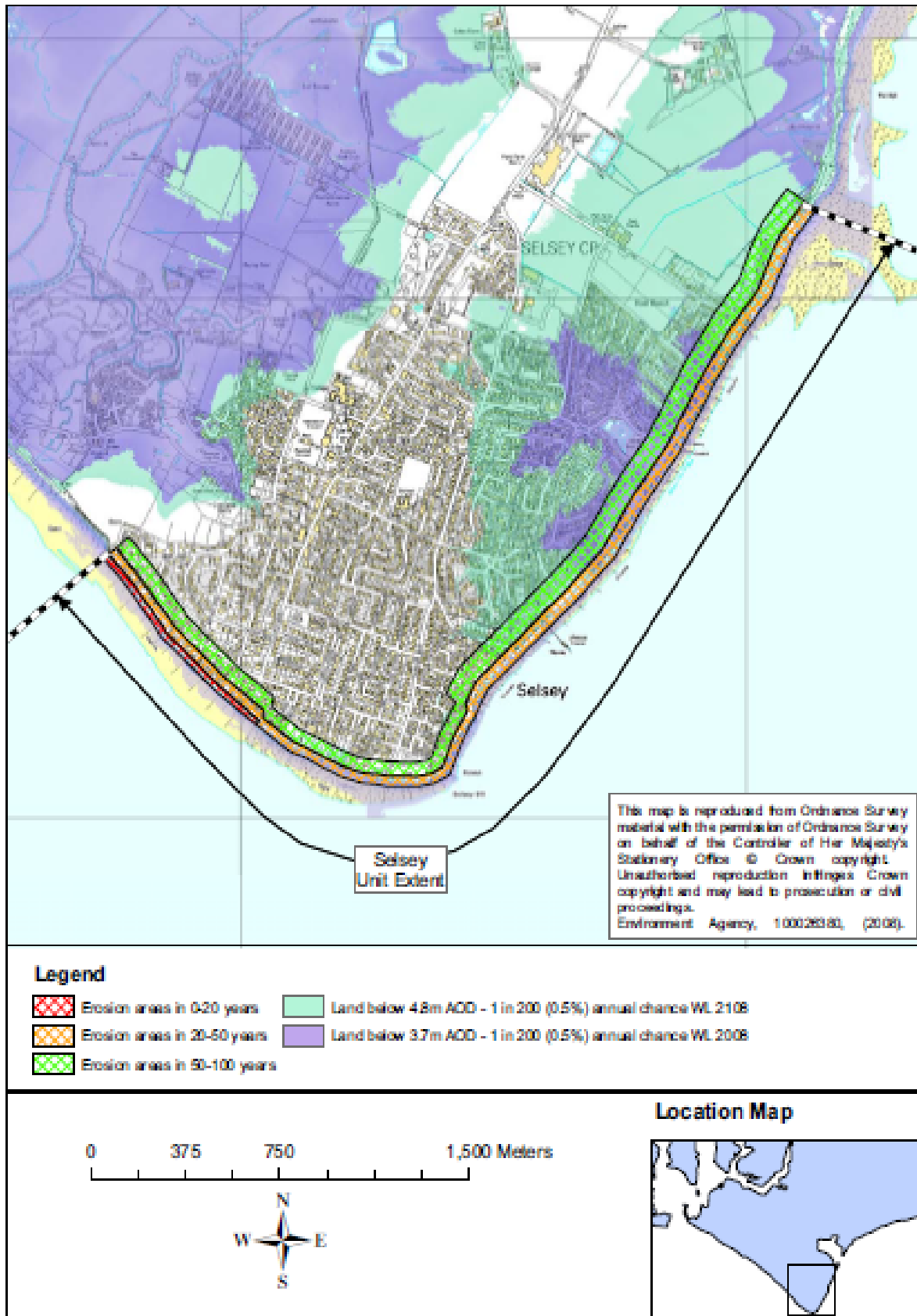


Produced on GIS by Gavin Holder, Coast and Land Drainage Officer  
 © Crown copyright and database rights 2011 Ordnance Survey 100018803



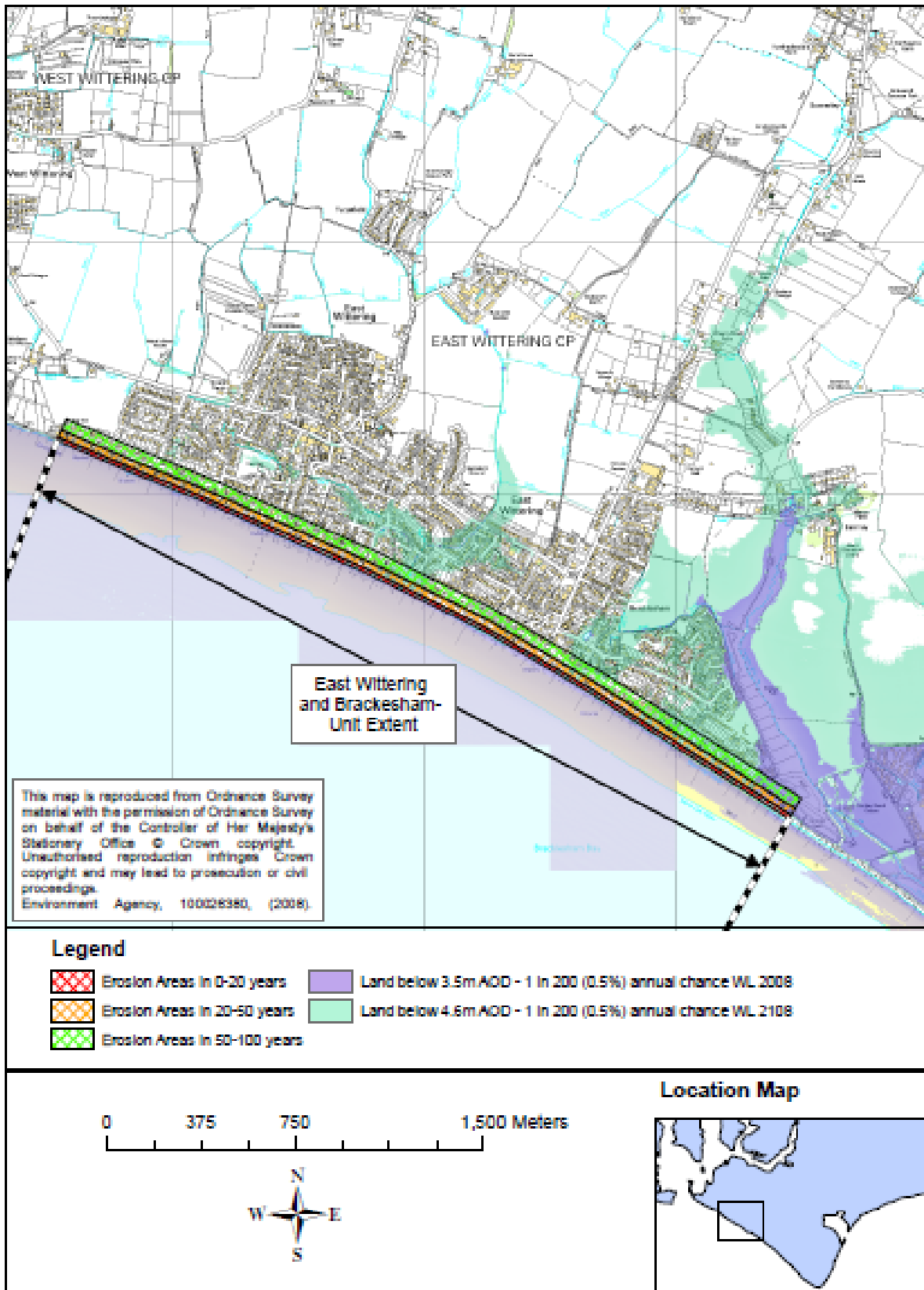


1.7.3 Plan 3

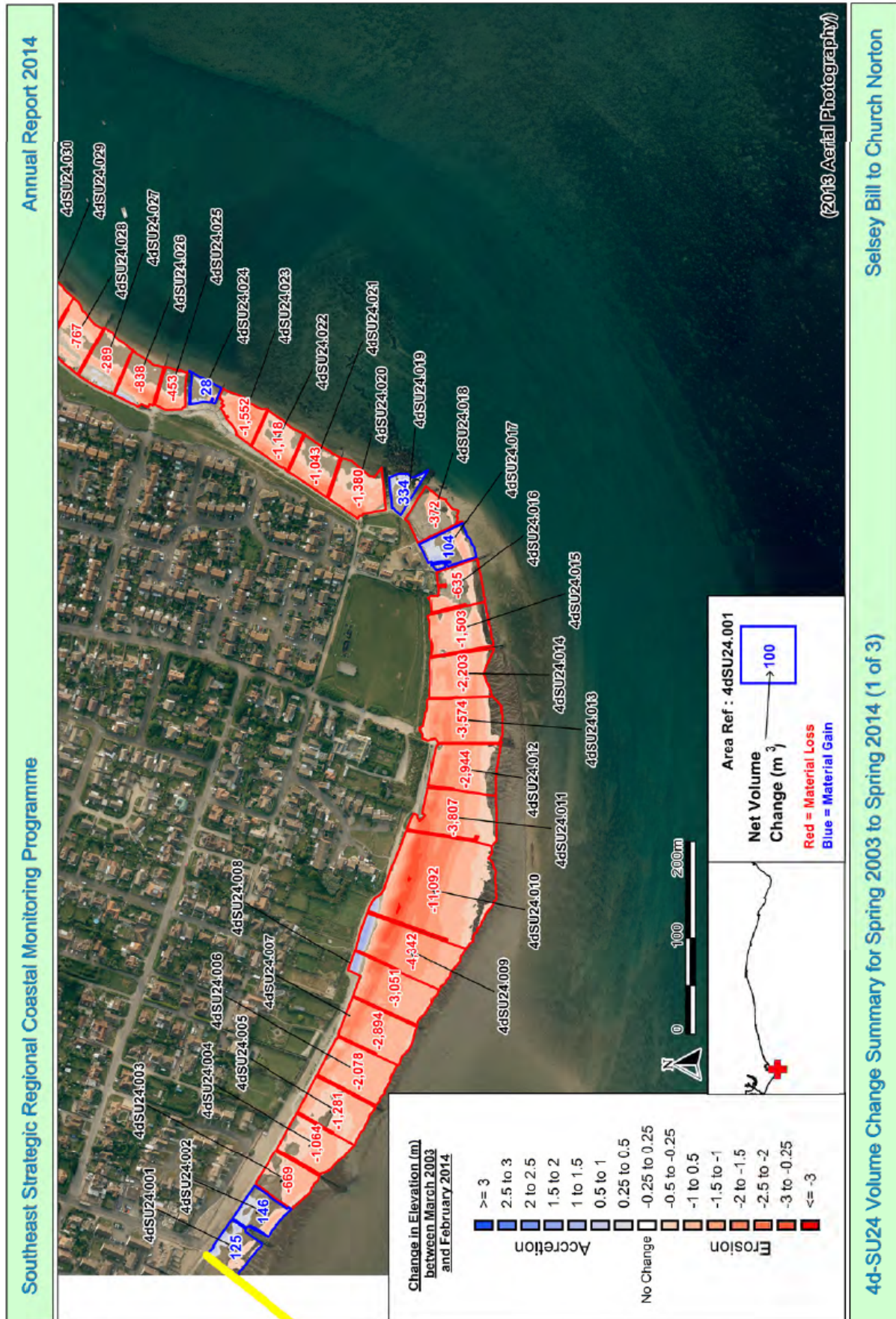


Extracted from the Pagham to East Head Coastal Defence Strategy Approval Report

1.7.4 Plan 4



Extracted from the Pagham to East Head Coastal Defence Strategy Approval Report



Selsey West Beach and Bill Difference Models with Volume change (m<sup>3</sup>) between spring 2003 and spring 2014. Extracted from the Strategic Regional Coastal Monitoring Programme, Beachy Head to Selsey Bill Report November 2014. (Images courtesy of Channel Coastal Observatory, [www.channelcoast.org.uk](http://www.channelcoast.org.uk))



1.7.6 Plan 6



Selsey East Beach Difference Models with Volume change (m<sup>3</sup>) between spring 2013 and spring 2014. Extracted from the Strategic Regional Coastal Monitoring Programme, Beachy Head to Selsey Bill Report November 2014. (Images courtesy of Channel Coastal Observatory, www.channelcoast.org.uk)

## **2 Introduction and background**

### **2.1 Purpose of this Report**

2.1.1 This report seeks Flood Defence Grant in Aid (FDGiA) to:

Update the Beach Management Plan (BMP) for Selsey, Bracklesham and East Wittering for the next five years – 2016/17 to 2021/22.

Undertake beach recycling and recharge activities to extend the life of the fixed coastal defence assets and delay the need for major reconstruction of them. This in turn allows time for collection of external contributions for when major reconstruction is required (from year 25 (2036 onwards) if this BMP is approved).

Gradually improve the fixed coastal defence assets over time, adjusting the height of beach retaining structures and rear defences as necessary, to achieve the policy of 'Hold The Line – Sustain' along these frontages.

2.1.2 The decision was taken to undertake a single BMP for the Selsey, Bracklesham and East Wittering frontages (either side of the Medmerry frontage) to secure efficiency.

2.1.3 If a region wide BMP is taken forward by EA Officers, the Selsey and Bracklesham / East Wittering BMP will be able to be readily incorporated into it. However due to the urgency for works along these proposed BMP frontages, it is essential to undertake a stand alone BMP and annual works now. In addition, the Selsey West Beach and Bracklesham / East Wittering frontage are unlikely to be covered by the EA's proposed region wide BMP.

2.1.4 This appraisal has been completed in accordance with the Defra Flood and Coastal Defence Project Appraisal Guidance. A plan illustrating the BMP coverage is included within Section 1.7 (Plan 1).

### **2.2 Background**

#### **Strategic and legislative framework**

2.2.1 The Selsey Bill and East Beach coastal frontages are covered by the Beachy Head to Selsey Bill SMP 2007. The Selsey West Beach, Bracklesham and East Wittering frontages are covered by the North Solent SMP (Hurst Spit to Selsey Bill) 2011. Within these two SMPs, all these frontages have an adopted policy option of 'Hold The Line'. Plan 2 (Section 1.7) illustrates the coverage of these SMPs along the coastline under Chichester District Council's jurisdiction.

2.2.2 In addition, all of the above frontages are covered by the Pagham to East Head Coastal Defence Strategy (PEHCDS) 2009, all with an adopted policy option of 'hold the line – sustain' over the next 100 years. Works proposed by the Strategy include:

Selsey: Raising the height of the existing seawall and groynes, and ongoing beach recycling / recharge.

Bracklesham and East Wittering: Adaptation of the existing defence structures; rebuilding of some structural elements; general beach management including re-distribution of material.

2.2.3 Chichester District Council (CDC) as the Coast Protection Authority has permissive powers under the Coast Protection Act 1949 to carry out the works proposed by this PAR

2.2.4 Appropriate licenses and consents will be obtained before any works commence for all frontages. This will include an MMO licence and any planning permission required. An extensive EIA was completed as part of the PEHCDS.

2.2.5 From October 2016 onwards, recharge and recycling operations will be underway, continuing to increase the BMP beach levels towards their design standard.

#### **Previous studies**

2.2.6 There have been numerous previous studies for coastal defence works at Selsey, Bracklesham and East Wittering, all of which identify the ongoing requirement for beach management works. These include:

2010 Project Appraisal Report (PAR) for Selsey West Beach Coast Protection Beach Recharge: This report sought FDGiA for work at Selsey West Beach to carry out minor repairs to the seawall, placement of a rock revetment to the base of the weaker sections of seawall, refurbishment and



heightening of key groynes and a 45,000 tonne beach recharge. The PAR also highlighted the need for ongoing beach management works at £100,000 per year over the next ten years, which were built into the Council's Medium Term Plan submission for 2010/11, which this PAR aims to secure.

**2007 PAR for Selsey West Beach Coast Protection W15-W19 Permanent Repairs:** This report sought funding to undertake permanent repair works to a part of the Selsey West Beach sea wall that collapsed during a 100% Annual Exceedance Probability (AEP) storm in 2007. The objectives of the repairs were to minimise economic losses and damage by maintaining and protecting the Selsey Beach frontage.

**2006 PAR for upgrading of East Wittering Coast Protection:** This report was developed as many of the seawalls; timber breastworks and groynes dating as far back as the 1950s are coming towards the end of their useful lives, such that upgrading is required. The PAR identified a preferred option that comprised redistribution of beach material, rebuilding and heightening of groynes and rebuilding / heightening of breastworks over the next 65 years.

**2005 PAR for upgrading of Selsey West Beach Coast Protection:** This report was developed, as the Selsey West Beach frontage suffers from persistently low beach levels, due to natural migration of beach material out of the area. The issue had become more critical leading up to 2005, with both the wear and tear of the defence structures, and the potential for undermining of the seawall increasing. It was identified that there was no prospect of the beach levels recovering under natural processes. The PAR identified a preferred option that comprised three elements:

Priority works – construction of rock revetments, and partial encasement of the seawall;

Capital works – periodic refurbishment of the existing concrete seawall and timber groynes with an initial beach recharge with imported material;

Ongoing works – involving regular recharge of the beach with recycled and/or imported material, together with monitoring and maintenance.

**Coastal Asset Surveys:** The Council undertakes internal quarterly coastal defence asset condition surveys, and procures an annual external asset survey. The asset survey undertaken in Winter 2009/10 demonstrated that at West Beach, Selsey much of the seawall had a life expectancy of 6 to 10 years, with one section being only 1 to 5 years. At Bracklesham, the majority of breastworks had a life expectancy of 6-10 years and groynes 1 to 5 years. Hence without beach management and capital asset maintenance, much of these 'hold the line' frontages would have begun to fail in the short term.

**Southeast Strategic Regional Coastal Monitoring Programme Annual Reports:** These reports provide an overview of beach changes along our frontages. Monitoring data between 2003 and 2014 demonstrates considerable losses of beach material from the frontages to be covered by this BMP as illustrated by Plans 5 & 6 (Section 1.7).

**Coastal Sediment Transport Study Vol 5 Chichester Harbour to Beachy Head:** This research was commissioned by the Standing Conference On Problems Associated with the Coastline (SCOPAC), and written by MJ Bray, DJ Carter and JM Hooke, University of Portsmouth, September 2004. It provides invaluable information on the coastal processes that operate along, and adjacent to the proposed BMP frontages.

- 2.2.7 To summarise, much detailed research and planning has been undertaken along the proposed BMP frontages, beyond the level of SMPs and Strategies. All studies conclude that we should extend the life of the key coastal defence assets for as long as possible, delaying the need for major, costly capital works, allowing time to plan and collect contributions. With appropriate beach management, the life of the capital coast defence assets can be considerably extended, avoiding failure in the short term if nothing is done, as will be explained in later sections. Valuable information from the above studies and research will feed into the BMP.

## Social and political background

- 2.2.8 The coastline provides a busy recreation and amenity area for residents and for a significant visiting public.

- 2.2.9 The coastline is heavily developed with almost uninterrupted residential properties along the Bracklesham, East Wittering and West Beach, Selsey frontages and significant green space and amenity areas at East Beach, Selsey
- 2.2.10 Selsey Town Council is committed to supporting coast protection works along its frontage and has set aside funding for this purpose.

### **Location and designations**

- 2.2.11 Selsey has 5.1km of open coastal frontage stretching between the Eastern end of Park Copse in the East, and West Street in the West, as illustrated by Plan 1 (Section 1.7). Selsey Bill is the southern most tip of the peninsula and has both an east and west-facing coastline. Selsey town is founded on the Bracklesham Beds (40 million years BP), which naturally form soft, eroding cliffs. The natural topography of Selsey is elevated so that erosion rather than flood risk is the main threat, however there is a pocket of low lying land behind the defences at East Beach, which is at flood risk should the defences fail.
- 2.2.12 The Bracklesham and East Wittering frontage consists of 3.1 km open coastline stretching between Bracklesham Drive in the east and Marine Drive West in the west, as illustrated by Plan 1 (Section 1.7). East Wittering and Bracklesham are popular coastal resorts for both locals and tourists with an upper beach walkway separated from a shingle and sand foreshore by timber breastwork and concrete defences. The land use behind the defences is predominantly urban with both residential and commercial properties. The majority of the land is raised, but the eastern end of Bracklesham includes low-lying areas, which could be at risk of flooding following failure of the defences.
- 2.2.13 The managed realignment works at Medmerry have reduced the flood risk to the East, however along the Bracklesham / East Wittering frontage, a breach of the defences at the Eastern end of East Bracklesham Drive, or between Tamarisk Walk and West Bracklesham Drive would lead to localised flooding, as illustrated on plan 4.
- 2.2.14 The beaches below mean high water at Bracklesham and East Wittering are designated as a Site of Special Scientific Interest (SSSI), site name: Bracklesham Bay. Selsey East Beach also has an SSSI in the vicinity of the lifeboat station. Pagham Harbour directly to the east is highly designated both nationally and internationally, we will ensure works at Selsey do not affect this area. Natural England provided a letter of support during the Pagham to East Head Coastal Defence Strategy consultations to confirm their view that the 100-year Strategy and proposed options are likely to lead to environmentally sustainable solutions. This is included as Appendix D.

### **History of flooding or coastal erosion**

- 2.2.15 In Selsey the main area of erosion, prior to sea wall and groyne construction in the mid 1950s, was along East Beach, where the high water mark retreated by approximately 150m over 60 years. The coast is now protected against erosion by a combination of groynes and hard defences.
- 2.2.16 In March 2007 a 40m section of the seawall at West Beach, Selsey suffered a significant failure, during a 1 in 1 year storm event after a significant reduction in beach volume. The concrete apron of the defences was undermined, leading to the loss of fill material below the apron and behind the sea wall, which caused the apron to subside and break up. This in-turn undermined the wall foundation leading to its failure. During the one week period between failure and completion of emergency repair works 15m of land was lost to erosion. Five houses are directly behind this failed area. The Council planned evacuation of at least one of the five properties, however the quick emergency response prevented the need for this. Photo 2.1 illustrates this collapse.



Photo 2.1: Sea wall collapse at Selsey West Beach in 2007 during a 1 in 1 year storm.

2.2.17 Although permanent repairs to the sea wall at this location were completed in 2009, our 2009 coastal defence asset inspection indicated that large sections of the sea wall at Selsey West Beach had a life expectancy of 6-10 years, with one section only having a life expectancy of 1 to 5 years. In addition, the Pagham to East Head Coastal Defence Strategy predicted that almost all the defences along this frontage would have failed within 20 years if nothing were done.

2.2.18 Due to the high risk of further collapses of the seawall at West Beach, groyne refurbishment and beach recharge activities were completed in March 2011. As was explained by the approved PAR for these works (Selsey West Beach Coast Protection Beach Recharge, July 2010), there is a requirement for ongoing maintenance to ensure ten years of additional life to the seawall. Photos 2.2 and 2.3 illustrate beach levels before and after this recharge.



Photo 2.2: West Beach, Selsey. Beach levels prior to the 2011 Selsey West Beach Recharge scheme.



Photo 2.3: West Beach, Selsey. Beach levels following 2011 Selsey West Beach Recharge scheme.



2.2.19 At Bracklesham and East Wittering, before construction of the defences in the 1950s this section of the coast was subject rates of erosion between one and two metres annually. The beach levels were so low in the winter 13/14 after the consecutive storms had prevented beaches from adopting a prestorm profile that the breastworks were undermined. The Council were able to secure, replace planking and extend the depth of the breastworks through replanking, illustrated by photo 2.4.

2.2.20 Our 2009 coastal defence asset inspection indicated that many of the Bracklesham and East Wittering rear breastwork defences only had a life expectancy of 6-10 years and the groynes 1–5 years without defence maintenance and beach management. Without more significant annual expenditure over the short term to maintain these defences and manage the beach levels, major failures will occur along these frontages, with the potential for an emergency situation to develop.



Photo 2.4: January 2014, Low beach levels at East Wittering causing undermining of timber breastworks.

2.2.21 Since the failure in January 2014, in January/February 2014, 8,500m<sup>3</sup> of shingle was recycled from the East to significantly improve beach levels. Illustrated by photos 2.5



Photo 2.5 East Wittering, January 2015, Beach levels following beach recycling in 2014.

2.2.22 The excellent performance of the beaches where BMP works had been carried out is an indication of the value attributed to maintaining an adequate beach width and height. The BMP beaches were drawn down and reprofiled by the 7 consecutive storms experienced between Oct 13 and Feb 14 but no significant damage or flooding was recorded. There was some overtopping and although sandbags were deployed and some damage occurred to windows of properties immediately behind the seawall, the defences were maintained and no evacuation was required.

## **2.3 Current Approach to Flood & Erosion Risk Management**

2.3.1 The current approach involves beach management funded by DEFRA (FDGiA) and CDC. The BMP over the past five years has :

- *Provided extension piles to 14 groyne at East Wittering west of Jolliffe Road, in 2011/12*
- *Recycled 8,500m<sup>3</sup> of shingle at East Wittering in 2013/14, material taken from eastern end of frontage and deposited west of Shore Road, West Wittering*
- *Recharged 6500t of shingle at West Beach, Selsey in 2013/14, material deposited at drift divide located at Danefield Road and material has distributed by actions of the sea in both easterly and westerly directions.*
- *Reconstructed breastworks at Solent Way, Selsey in 2014/15. This involved replacing collapsed gabion defence with substantial timber breastworks which improves the level of protection to the properties.*
- *Recharged 8000t of shingle at Jolliffe Road, East Wittering 2014/15. This improves the standard of the protection to properties at the western end of the frontage by establishing a beach profile that will absorb wave energy and prevent overtopping.*
- *Improved / raised groyne at East Beach, West Beach Selsey and East Wittering 2011-2016, this work was carried out at various points where beach levels have been improved and this will help stabilise the beach profiles and reduce the risk of erosion*

2.3.2 CDC continue to monitor the condition of beaches and coast protection assets quarterly and carry out repairs and improvements as necessary.

### 3 Problem definition and objectives

#### 3.1 Outline of the problem

- 3.1.1 The key problem along the Bracklesham, East Wittering and Selsey frontages is the lack of or poor distribution of beach material which is an integral part of the defences which are necessary to manage the risk of erosion and breaching. The rate of attrition had exceeded the Council's ability to fully maintain the beach to a design standard, due to limited budgets, the beach management approach has shown a considerable improvement in standard of beach where work has been carried out.
- 3.1.2 If no beach management activities are undertaken to maintain critical beach levels along these frontages, we will experience further asset failures within 5 years, leading to flooding and erosion of properties that are at risk within the short term (according to both the PEHCDS and 2009 CDC annual asset survey). Over time, climate change leading to rising sea levels will affect flood and erosion risk increasingly. Table 3.1 illustrates the number of properties at flood and erosion risk over the short term (0-20 years), and in the long term (100 years). Plans 3 and 4 illustrate the flood and erosion risks, extracted from the PEHCDS. Appendix E is information provided by the Environment Agency on the number of properties at risk.

Table 3.1 Properties at risk (PEHCDS with 2011 analysis)

Year	Frontage	Number of houses at risk	
		Flooding	Erosion
Short term 1 in 75 yrs (0-20yrs)	Selsey	388	55
	Bracklesham & East Wittering	41	23
	<b>Combined</b>	<b>429</b>	<b>78</b>
2108 1 in 200 yrs	Selsey	1,717	587
	Bracklesham & East Wittering	522	432
	<b>Combined</b>	<b>2,239</b>	<b>1,019</b>

- 3.1.3 It is important to note that the PEHCDS used sea level rise projections from UKCP06, whereas new data and guidance has been developed as UKCP09. In line with EA guidance (Adapting to Climate Change: Advice for Flood and Erosion Risk Management Authorities), the strategy UKCP06 projections have been compared to the newer UKCP09 projections for the BMP frontages and there is little change. The UKCPO9 projections are less than 0.1mm lower for years 2025 onwards, and therefore the strategy figures have been used in the preparation of this PAR.

#### 3.2 Consequence of Doing Nothing

- 3.2.1 Plans 3 and 4 (Section 1.7) illustrate the land at risk to flooding and erosion over the next 100 years at Selsey, Bracklesham and East Wittering, assuming we immediately stop maintaining defences. Each frontage is discussed in turn with information extracted from the PEHCDS.
- 3.2.2 **Selsey East Beach:** in the short term the groynes would likely begin failing within 5-7 years (by 2022). With cessation of maintenance, the loss of beach material in this area will rapidly increase. This would expose the defences to wave attack and increase the rate of failure. Before the defences were built, Selsey East Beach had an average rate of erosion of 1.7m per year with a peak of some 8m per year adjacent to the lifeboat station. In the medium term all the sea defences at Selsey East Beach are likely to be close to failure (by 2030). The topography behind East Beach is like a bowl, with a large number of properties within these low-lying areas (by 2030, 638 properties would be in a 1 in 200 year (0.5%) chance of flooding in any given year according to the PEHCDS). Failure of the seawall would expose some of these properties to frequent flood damage, quickly making them uninhabitable. The coastline would erode with 126 residential and 2 commercial properties likely to be lost either through flooding or erosion over the next 100 years.
- 3.2.3 **Selsey Bill:** in the short term, the sea wall would begin to deteriorate, and the risk of undermining would increase. As the beaches deplete, the resulting wave energy would increase wave overtopping of the seawall. This could damage the back face of the wall, increasing rates of

degradation. The groyne would begin failing within 5 years (2020) with increasing exposure. The tip of Selsey Bill will not experience significant impacts due to the raised topography. In the medium term (by 2030), it is expected that both the seawall and groyne will be close to failure. Historically there have been pulses of sediment supplied naturally from the Kirk Arrow Spit, offshore of Selsey Bill. Its evolution is unknown but may offer protection in the future. By year 50 (2060) it is anticipated that 3 properties will be lost by erosion. The risk of flooding to Selsey Bill is minimal due to the raised topography, with smaller areas only likely to be affected by overtopping.

- 3.2.4 **Selsey West Beach:** has already seen a failure of the seawall (2007). This section of seawall was repaired in 2009 and in 2011 a capital beach recharge scheme to increase the beach heights was implemented. The 2011 scheme was required as our annual asset surveys indicated that other sections of the sea wall were expected to collapse within 5 years time (2010 – 2015), due to critically low beach levels. Although this capital beach recharge scheme has improved the situation at Selsey West Beach, if beach levels are not maintained, the seawall could again be at significant risk within 1 - 5 years (2016 - 2020). If other sections of the seawall do collapse, erosion rates will be at least 3 metres per year for the first 5 years following failure, according to the PEHCDS.
- 3.2.5 Experience of the sea wall collapse in 2007 has indicated that this rate of erosion is conservative, as 15m of landward erosion occurred within a week when the seawall collapsed during a 1 in 1 year storm. Therefore the erosion rates illustrated in the SMP are conservative and more properties are believed to be at risk from erosion over the short term (next 20 years) than quoted in the PEHCDS. After 5 years rapid erosion, the PEHCDS predicted that the erosion rate would return to an average of 1m per year.
- 3.2.6 In the medium term, the defences at Selsey West Beach will have long since failed. Between year 15 and 50 (2030 – 2065) this section of coastline is expected to retreat at a steady rate of approximately 1m per year with the loss of 62 residential properties. This number should again be debatably higher, as it does not take into account the rapid rates of erosion we experienced in 2007, as discussed above.
- 3.2.7 **Selsey Combined - Long Term:** In the long term (50 – 100 years), there will be no defences left at Selsey and the coastline will have formed a natural erosive profile, with rates of erosion ranging between 1 and 1.7m per year. In addition, the rates of overtopping will increase as sea level rises, putting more properties at risk of flooding. By 2108 it is anticipated that at least 587 properties will be lost to erosion or 1717 properties will experience frequent flooding across the Selsey frontage. Table 3.1 provides a summary of the properties at risk to flooding and erosion in Selsey in 2008 and 2108, extracted from the PEHCDS.
- 3.2.8 **Bracklesham and East Wittering:** in the short term (2011 - 2030) the PEHCDS identified that the groyne and some of the breastwork and concrete walls comprising the frontage will fail. Consequently the existing defences are likely to fail over the next 15 years. The PEHCDS was completed in 2009, and since this time there have been various failures of the breastworks and groyne along this frontage, due to low beach levels.
- 3.2.9 Works have always been quickly initiated where damage occurs to the Breastworks, to avoid erosion rates of approximately 1 metre per year, as quoted by the PEHCDS. This rate of erosion could result in a loss of 23 properties by 2030 if nothing were done to prevent it. Coastal Engineers who maintain these defences believe this estimate of erosion is too conservative. In 2009, when a section of breastwork was undermined during a 1 in 1 year storm, over one metre of landward erosion occurred in less than a week. The land would have continued to erode without action to prevent it.
- 3.2.10 In the medium term, the current defences at Bracklesham and East Wittering would be totally ineffective with only relic structures remaining, posing health and safety issues. The shoreline would continue to migrate landward at a rate of 1m per year, with a sharp increase in the number of properties lost to erosion. The PEHCDS estimates that 206 residential and 35 commercial properties would be lost by to erosion by year 2050. In the short to medium term, the Environment Agency's Managed Realignment scheme to the immediate east of this frontage (Medmerry) may affect sediment supplies to the eastern end of the Bracklesham frontage, being a barrier to the predominant Longshore Drift of shingle from east to west. This needs to be closely monitored, as the beaches at the eastern end of Bracklesham could become starved as an offshore delta develops following the breach to complete the managed realignment scheme. This was identified within the Medmerry Managed Realignment Environmental Statement, within the Coastal and Hydrodynamic Modelling Report – Phase 2, written by ABPmer in February 2010.



3.2.11 Looking towards the long term, if no beach management is undertaken, it is anticipated that by 2108, 522 residential and 67 commercial properties will be lost to erosion. Due to low lying areas of land within East Wittering, areas will act as sinks to tidal overtopping, resulting in flooding which will affect properties.

### **3.3 Strategic Issues**

3.3.1 The Pagham to East Head Coastal Defence Strategy has been written and adopted by all relevant operating authorities. It recommends 'Hold The Line – Sustain for the Selsey, Bracklesham and East Wittering frontages.

### **3.4 Key Constraints**

3.4.1 The only designation that exists along the proposed BMP frontage is the Bracklesham Bay SSSI. Natural England will be consulted throughout the BMP process in accordance with their statutory role under the Conservation (Natural Habitats & C.) Regulations 1994. The works proposed are not expected to be constrained by this designation, as they will not be detrimental to it. Natural England supported the PEHCDS policy options for these frontages, as to 'hold the line – sustain' will be no more detrimental to these frontages than any other management options assessed by the Strategy. It may be necessary to undertake an Appropriate Assessment should Natural England require this, which would be developed alongside the Beach Management Plan written document.

3.4.2 There are no known archaeological features of international, national or local importance that could be disturbed by the proposed beach management operations.

3.4.3 A further constraint is time, as it is difficult to undertake beach recycling / recharge works during the summer tourist months or during harsh winter months where works are at risk of being delayed, and costs increased. With careful management and planning, the time constraint is easily overcome. Through the BMP process, it will be possible to actively explore opportunities to combine recharge operations with adjacent authorities, to get best value for money and save on mobilisation costs. In addition, as the BMP is a 5-year plan, there is flexibility within this approach to better plan works, group items together and plan timings, all of which can lead to significant efficiencies.

### **3.5 Objectives**

3.5.1 The objectives for these works have been identified via the two SMPs that cover this area, the PEHCDS, and CDC via its annual asset surveys.

3.5.2 In the short to medium term, beach management activities will increase the life of defences to the Selsey, Bracklesham and East Wittering communities, as erosion and flooding will be delayed. During the five year BMP, CDC as the operating authority for these frontages will work with the communities and local businesses to explore contributions towards future major capital works that will be required from year 20 onwards (2030).

3.5.3 The objectives of the proposed works are listed below. They have been grouped to reflect whether they are primarily coastal processes, economic, social or environmental drivers, however most of the objectives demonstrate a mix of these:

#### **Coastal Process:**

- To monitor adjacent schemes such as the Medmerry Managed Realignment scheme to the immediate east of Bracklesham to prevent any negative impacts from changes in the natural coastal processes as the scheme develops;
- To make good use of surplus beach material locally, that could be of benefit elsewhere along the frontage (+ economic);
- To maintain beach levels that reduce wave impacts and add to the amenity value (+ social).

#### **Economic:**

- To extend the life of the fixed coastal defence assets through beach recharge and delay the need for major capital coast protection works (+ coastal process);

- To sustain the current standard of protection to adapt to sea level rise and avoid damage from frequent overtopping (+ social and coastal process);
- To achieve the management policy from the Pagham to East Head Coastal Defence Strategy and Shoreline Management Plans of 'Hold The Line – Sustain' along these frontages (+ social, environmental and coastal process);
- To ensure the 2011 capital beach recharge works at Selsey West Beach are properly maintained to prolong the effectiveness of the works, as built into the original business case (+ social).

**Social:**

- To reduce the risk from erosion and flooding to the communities of Selsey, Bracklesham and East Wittering (+ coastal process and economic);
- To involve the community and allow time to consider and raise contributions for major capital works when they are required in the medium term (+ economic);
- To raise community awareness of coastal management issues along these frontages.

**Environmental:**

- To protect and enhance the environment where possible;
- To work with natural coastal processes and limit disturbance on the geological interest of the SSSI at Bracklesham and East Wittering (+ coastal process).

## 4 Options for Managing Flood and Erosion Risks

### 4.1 Potential FCERM Measures

4.1.1 Potential FCERM measures were identified within the PEHCDS. These Strategic Options are summarised in table 4.1.

Table 4.1 Potential FCERM measures identified within the PEHCDS

Strategic Option	Description
No Active Intervention	No maintenance or improvements undertaken allowing the existing defences to deteriorate under the impact of natural coastal processes.
Do Minimum	This option will provide a patch and repair approach on existing assets. This approach will revert to No Active Intervention once the residual life of existing defences is reached and cannot be extended any further.
Hold The Existing Defence Line	Maintaining or changing the standard of protection on the existing defence line. The implementation of this policy can be undertaken using the following approaches: <ul style="list-style-type: none"> <li>○ Maintain – Defences are maintained at their current level to minimise the damage from failure. Because of the effects of climate change there will be a reduction in the standard of protection over time.</li> <li>○ Sustain – The defence levels are improved over time to preserve the standard of protection taking into account climate change.</li> <li>○ Improve – Raise the standard of protection above that already existing.</li> </ul>
Managed Realignment	Policies aimed at allowing a landward movement of the shoreline position with some form of management intervention, on both flood and erosion prone frontages.
Adaptive Management	Adaptive Management is an approach, which promotes flexible decision making with an emphasis on sequential decisions and actions in the face of uncertainty. It provides the opportunity for improved management as more understanding of the system is gained over time. A Management Plan is established which sets out its objectives, possible measures to achieve these objectives and a series of trigger points for where intervention may be required. Monitoring forms a key element of the process.

4.1.2 A Beach Management Plan would meet the Hold The Line – Sustain approach.

### 4.2 Long List of Options

4.2.1 A list of options for the Selsey, Bracklesham and East Wittering frontages were identified and assessed within the PEHCDS

### 4.3 Options rejected at the preliminary stage

4.3.1 Options were assessed within the PEHCDS and discarded as inappropriate. Each option is a variation on the potential FCERM measures identified in Table 4.1.

4.3.2 The PEHCDS discounted many of the long list options following appraisal of these, leaving a short list of options along each frontage. An economic, technical and environmental analysis was completed on these, which will be discussed in turn for each frontage.

### 4.4 Options Shortlisted for Appraisal

4.4.1 The remainder of this PAR will focus on the 'Hold The Line – Sustain BMP option in line with the PEHCDS as other management options have already been discounted by this, as discussed. Section 5 will demonstrate how a BMP is justified. Section 6 will go on to explain how delaying the need for major capital works, through the proposed BMP will allow time for contributions to be better explained..

## 5 Options Appraisal and Comparison

### 5.1 Technical Issues

- 5.1.1 There was a perceived technical issue with road delivery of material for the first phase of the BMP, but recent experience has highlighted that delivery of shingle by road has been accepted by the local community.
- 5.1.2 Obvious cost savings can be made by combining the Selsey and Bracklesham / East Wittering frontages into one BMP. The frontages are almost identical in the way they need to be managed over the short to medium term and therefore planning for works and carrying out construction works can be combined, saving the costs of looking at these two frontages in isolation. Savings can also be made through procurement and joint working. In addition, both frontages are divided by Medmerry, where the EA managed realignment scheme is currently underway. The BMP can therefore take into account the effects of this scheme on the coastal processes either side, as significant changes may occur as the realignment establishes its normal processes. Section 5 explains the economic justification of combining the two frontages into one BMP.

### 5.2 Environmental Assessment

- 5.2.1 The proposed BMP for Selsey and Bracklesham / East Wittering has been extracted from the recommendations of the PEHCDS, as it helps achieve the adopted strategic policy option of 'Hold The Line – Sustain' for these frontages.
- 5.2.2 The PEHCDS recommendations were supported by Natural England who noted that the strategic policy options were likely to lead to environmentally acceptable solutions. Natural England will be consulted throughout the preparation of this BMP in accordance with their statutory role under the Conservation (Natural Habitats & C.) Regulations 1994.
- 5.2.3 The PEHCDS Strategic Environmental Assessment (SEA) was undertaken to assess the strategic options for each frontage in the context of the objectives of the Water Framework Directive. Tables 5.2 and 5.3 below illustrate the impact assessments undertaken by the SEA at Selsey and Bracklesham / East Wittering respectively. Table 5.1 illustrates a key to the option assessment tables.

Table 5.1 Key to Option Assessment Tables.

Key to the option assessment tables			
---	Major adverse	+++	Major positive
--	Moderate adverse	++	Moderate positive
-	Minor adverse	+	Minor positive
0	Negligible	N/A	Not applicable
S = Short Term M = Medium Term L = Long Term			

Table 5.2 Option Assessment Table for Selsey

	Objective	No Active Intervention			Do Minimum			Hold the Line (Maintain)			Hold the Line (Sustain)		
		S	M	L	S	M	L	S	M	L	S	M	L
1	Manage flood risk to people, property and the environment	--	---	---	-	--	---	0	-	--	+	++	+++
2	Conserve and enhance biodiversity	0	-	-	0	-	-	0	-	-	0	-	--
3	Maintain and enhance opportunities for recreation and tourism	0	-	--	0	-	-	0	0	-	0	+	++
4	Protect farmland where sustainable to do so	0	-	--	0	0	-	0	0	-	0	0	0
5	Protect and enhance water resources	0	-	--	0	-	-	0	0	-	0	+	+
6	Protect features of archaeology and cultural heritage	0	-	-	0	0	-	0	0	0	0	0	0
7	Maintain and enhance landscape character and visual amenity features	-	-	--	0	-	-	0	0	-	0	-	-
8	Mitigate/minimise future impacts of climate change	---	---	---	--	---	---	-	--	---	+++	+++	+++
9	Promote the principles of sustainable development	++	++	++	+	+	+	-	-	--	-	--	---

Table 5.3 Option Assessment Table for East Wittering and Bracklesham

	Objective	No Active Intervention			Do Minimum			Hold the Line (Sustain)		
		S	M	L	S	M	L	S	M	L
1	Manage flood risk to people, property and the environment	--	---	---	-	--	---	+	++	++
2	Conserve and enhance biodiversity	0	0	0	0	0	0	0	-	-
3	Maintain and enhance opportunities for recreation and tourism	-	-	--	0	-	--	+	+	+
4	Protect farmland where sustainable to do so	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	Protect and enhance water resources	0	-	-	0	-	-	0	+	+
6	Protect features of archaeology and cultural heritage	0	-	--	0	-	-	0	+	+
7	Maintain and enhance landscape character and visual amenity features	0	-	-	0	-	-	0	0	0
8	Mitigate/minimise future impacts of climate change	--	---	---	--	---	---	+++	+++	+++
9	Promote the principles of sustainable development	++	++	++	0	0	0	-	--	---

5.2.4 Table 5.2 concludes that the preferred option for the Selsey frontage is to ‘Hold The Line – Sustain’. This provides a long-term sustainable solution to protection of the important assets behind this frontage, while adverse environmental impacts would not be significantly increased over the other options that were considered.

5.2.5 Table 5.3 illustrates that the preferred environmental option for the East Wittering and Bracklesham frontage is also ‘Hold The Line – Sustain’. This would protect the assets and the recreational and amenity interests along this frontage, while any adverse impacts to the SSSI would not be significantly increased the over other options that were considered.

### 5.3 Social and Community Impacts

5.3.1 A ‘No Active Intervention’ or ‘Do Minimum’ approach along the proposed BMP frontages would have significant detrimental impacts on the large communities of Selsey and Bracklesham / East Wittering in terms of loss of assets and viability of the local tourist economy by the end of the short term. Selsey alone has a population of 10,000, which doubles in the summer, largely due to the influx of tourists to one of Europe’s largest caravan site.

5.3.2 Local residents have developed an improved understanding of coastal management issues, through the PEHCDS consultations and through the recent works of the Pathfinder Project completed by the District Council. The community are aware that funding is not guaranteed to achieve the strategic policy options set by SMPs and PEHCDS. Representatives from the community have explained that they are very keen to see annual beach management works to improve the standard of protection from overtopping and maximise the life of the coastal defences. Selsey Town Council are already putting aside funds for future capital coast protection schemes, when defences need totally renewing / raising to achieve the policy of ‘Hold The Line – Sustain’. Therefore the community require us to extend the life of the defences as long as possible.

### 5.4 Option Costs

5.4.1 Table 5.4 illustrates a combined economic summary of the short list options extracted from the PEHCDS for the Selsey, Bracklesham and East Wittering frontages over the next 100 years. It also includes an economic summary of the proposed BMP for these frontages on which this bid for FDGiA is based. As can be seen, this option gives the best Benefit: Cost Ratio of 1 to 19.34.

**Table 5.4: Economic Summary of Options for Selsey and Bracklesham / East Wittering Combined:**

Option (with SoP at year 99)	PV Benefit (£K)	PV Cost (£K)	BC Ratio
No Active Intervention	-	-	-
Hold The Line Maintain	144,542	65,084	2.2
Hold The Line – Sustain	167,648	58,966	2.8
Hold The Line – Sustain: Beach Management Plan (with major capital works every 25 years)	167,300	8,652	19.34

5.4.2 The Hold The Line – Sustain: Beach Management Plan (with major capital works every 25 years) option, has been calculated on the basis that £200,000 will be spent on beach management / defence improvement every year over the next 100 years, and £6 million spent every 25 years (year 25, 50 and 75) as capital works to renew / heighten key coastal defence assets. By significantly extending the life of the defences through beach management works, time is available (up to year 25) to seek significant contributions towards the capital works that will be required.

**Table 5.5: Justification of the BMP for the Next 5 Years**

Frontage Length (Km)	Flooding Properties (1 in 75 yrs.)	Erosion Properties	PV Assets (£K)	PV Costs (£K)	Raw PF	Contributions	Adjusted PF
8.2	429	78	28,010	1,250	152%	0	152%

All the data within Table 5.5 has been extracted from the partnership funding calculator attached as Appendix C

## **6 Selection and details of the preferred option**

6.1.1 The preferred option is a BMP covering Selsey, Bracklesham and East Wittering over the next 100 years, with the aim to replace and heighten key coastal defence assets over this time, in line with the adopted coastal defence policy option along these frontages of 'Hold The Line – Sustain'.

### **6.2 Sensitivity Testing**

6.2.1 If funding is not secured for the proposed BMP, the Council will only be able to implement a 'Do Minimum' approach to manage the flood and erosion risks along the Selsey, Bracklesham and East Wittering frontages. This will be undertaken using the Council's revenue maintenance budget. Due to the current estimated residual life of defences under this approach, defence collapses would be expected within 5 years, at which point the Council would be seeking emergency funding or begin planning an exit strategy and looking to evacuate residents.

### **6.3 Details of the Preferred Option**

#### **Technical Aspects**

6.3.1 In year one, CDC will update the previous BMP, covering the 2011/12 to 2015/16 period. Also during year one the Council intends to import shingle to Danefield Road, Selsey (drift divide) and raise the planking on groynes S1-S32 (East Wittering) to aide retention of the recharge undertaken in 2015.

6.3.2 Works from year two onwards will include further beach recharge, rock placement and defence repairs / improvements. Many of the groynes are not currently high enough to maintain critical beach levels and this will be one of the key aspects to improve over the next five years. The decisions will be based on careful assessment of both Strategic Coastal Monitoring data and the Council's own inspections.

6.3.3 The proposed BMP works are easily achievable along the Selsey and Bracklesham / East Wittering frontages, and are similar to works the Council has had experience of in the past. No technical difficulties are of concern and the 5 year length of the BMP allows flexibility to ensure best value on construction works and on importation of shingle.

6.3.4 During the BMP, one of the most important ongoing actions will be to continue discussions with the Parish and Town Council's and the communities to address the medium term funding issues.

#### **Environmental Aspects**

6.3.5 Along the proposed BMP frontage is the Bracklesham Bay SSSI and the East Beach SSSI at East Beach Seksey. Natural England will be consulted throughout the BMP process in accordance with their statutory role under the Conservation (Natural Habitats & C.) Regulations 1994. The works proposed are not expected to be constrained by these designation, as they will not be detrimental to it. Natural England supported the PEHCDS policy options for these frontages, as to 'hold the line – sustain' will be no more detrimental to these frontages than any other management options assessed by the Strategy.

#### **Local Political considerations**

6.3.6 Local residents have developed an improved understanding of coastal management issues, through the PEHCDS consultations and through the recent works of the Pathfinder Project completed by the District Council. The community are aware that funding is not guaranteed to achieve the strategic policy options set by SMPs and the PEHCDS. Representatives from the community have explained that they are very keen to see annual beach management works to extend the life of the coastal defences as much as possible. Selsey Town Council are already securing funding for future capital coast protection schemes, when defences need totally renewing / raising to achieve the policy of 'Hold The Line – Sustain'. Therefore the community require us to extend the life of the defences as long as possible.



## Costs for the Preferred Option

**Table 6.1: Project Costs for Preferred Option (£k)**

Row	Items	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<b>A</b>	CDC Costs	5	5	5	5	5	25
<b>B</b>	Consultant costs	20	20	20	20	20	100
<b>C</b>	BMP Activity costs (C1+C2)	200	200	200	200	200	1000
	<i>C1 Recharge / Recycling</i>	<i>175</i>	<i>175</i>	<i>170</i>	<i>170</i>	<i>170</i>	<i>860</i>
	<i>C2 Timber Works</i>	<i>25</i>	<i>25</i>	<i>30</i>	<i>30</i>	<i>30</i>	<i>140</i>
<b>D</b>	Contingency	25	25	25	25	25	125
<b>E</b>	Total Expenditure (A+B+C+D)	250	250	250	250	250	1250
<b>F</b>	- Total Contributions Secured	0	0	0	0	0	0
<b>G</b>	<b>Total FDGIA (E-F)</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>1250</b>

6.3.7 Table 6.1 provides a summary of the BMP costs over the next 5 years. £100,000 has been allocated towards consultant fees, which are required for procurement of contractors, critical beach design / coastal defence design and general advice throughout the five-year BMP. £1,000,000 remains purely for construction works. In table 2.2, the risk contingency is £125,000 (10% of overall costs). This may be required in the event of unforeseen changes in beach profiles to maintain the standard of defence. The Council has a small remaining budget for coastal maintenance works, which may be available to cover any additional works and the frontage not covered by the BMP.

## Contributions, Funding and Efficiency Savings

6.3.8 The Council are seeking a total of £1,250,000 FDGiA over the next 5 years for this scheme (£250k per year).

6.3.9 The Council are exploring options including putting aside funds on an annual basis (up to £50k annually) which would be available as an external contribution in year 25, when major capital works are expected to be required.

6.3.10 Further to this, the Council is actively seeking contributions towards future coastal defence works. The Council has already worked with Selsey Town Council who are securing funding specifically towards coastal defence works to protect Selsey. This contribution could be saved up towards year 25 when major capital works are likely to be required to strengthen and heighten the sea wall, and replace ageing groynes. The Council intends to have similar discussions with East Wittering and Bracklesham in the future, whether or not this proves a success.

6.3.11 Efficiencies have been identified in the way we procure work and ensure the best possible return on expenditure and attached as Appendix B is the completed CERT spreadsheet.

## Outcome Measures and Funding Priority

6.3.12 Table 6.2 includes key figures extracted from the partnership funding calculator to demonstrate the outcome measures and prioritisation score.

### Table Error! No text of specified style in document..2 Outcome Measure Contributions and Prioritisation Score

Outcome Measure	Combined Total (Years 2016/17 to 2021/22)
OM1 The ratio of the whole life present value benefits (PVb) to the whole life present value costs (PVC) from projects in the FDGiA capital investment programme.	22.41
PV Benefits (£k)	28,010
PV Damages (£k)	1,250
OM2 The number of households moved out of any flood probability category to a lower one.	429
OM2b The number of households moved out of the very significant or significant flood probability categories.	429
OM2c The number of households in the 20% most deprived areas moved out of the significant or very significant probability categories.	0
OM3 The number of households with reduced risk of coastal erosion.	78
OM3b The number of households protected against loss in 20yrs from coastal erosion.	78
OM3c The number of households in the 20% most deprived areas protected against loss in 20yrs from coastal erosion.	0
OM4a Hectares of water dependent habitat created or improved to help meet the objectives of the Water Framework Directive.	0
OM4b Hectares of inter-tidal habitat created to help meet the objectives of the Water Framework Directive for areas protected under the EU Habitats/Birds Directive.	0
OM4c Kilometres of rivers protected under the EU Habitats / Birds Directive improved to help meet the objectives of the Water Framework Directive.	0
Outcome Measure Prioritisation Score.	
Raw	152%
With Contributions	152%

## 7 Implementation

### 7.1 Project Planning

#### Phasing and Approach

- 7.1.1 In year one, CDC will update the BMP which covered the period 2011/12 to 2015/16. Also during year one the Council intends to import shingle to Danefield Road, Selsey (drift divide) and raise the planking on groynes S1-S32 to aide retention of the recharge undertaken in 2015.
- 7.1.2 Works from year two onwards will be a mix of beach recharge and improvements to the existing defences as identified by the BMP. Many of the groynes requiring raising to maintain critical beach levels and this will be one of the key aspects to improve over the next five years.
- 7.1.3 On completion of this BMP in 2021/22, the District Council will be preparing a new 5-year BMP for the period 2022/23 to 2026/27 to continue beach management. This 5-year beach management planning will continue on a recurring basis until year 25 (2036/37), when major capital works are likely to be required.
- 7.1.4 The proposed BMP works are easily achievable along the Selsey and Bracklesham / East Wittering frontages, and are similar to works the Council has carried out in the first 5 years. No technical difficulties are of concern and the 5 -year length of the BMP allows flexibility to ensure best value on construction works and on importations of shingle.

#### Programme and Spend Profile

- 7.1.5 This PAR seeks a total of £1,250,000 FDGiA, this is to be split as shown in table 7.1 over the next five years (2016/17– 2021/22).

**Table Error! No text of specified style in document..1 Annualised Spend Profile (£k)**

	2011/12	2012/13	2013/14	2014/15	2015/16	Total
Existing Staff costs	5	5	5	5	5	25
Professional Fees	20	20	20	20	20	100
Construction	200	200	200	200	200	1000
Contingency	25	25	25	25	25	125
Environmental mitigation	0	0	0	0	0	0
Environmental enhancement	0	0	0	0	0	0
Compensation	0	0	0	0	0	0
Sub-total	250	250	250	250	250	1250
Less Contributions	0	0	0	0	0	0
<b>Total grant eligible sum *</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>1250</b>

- 7.1.6 Table 7.1 illustrates the annualised spend profile across the 5-year BMP. It illustrates the total cost of the 5-year BMP, and the total FDGiA being sought by this PAR.

## 7.2 Delivery Risks

### High-level risk register

7.2.1 A small number of delivery risks have been identified and recorded in table 7.2 below.

Table Error! No text of specified style in document..2 High Level Risk Schedule and Mitigation

Key Project Risk	Adopted Mitigation Measure	Cost
Not securing FDGiA funding to progress schemes.	<ul style="list-style-type: none"> <li>Seek alternative funding sources, which may be difficult in the short term;</li> <li>If above cannot be achieved, develop Exit Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>In-house;</li> <li>In-house.</li> </ul>
Further collapses on Selsey West Beach Sea Wall prior to scheme implementation (low risk due to 2011 Selsey West Beach Scheme).	<ul style="list-style-type: none"> <li>Continued monitoring of existing defences and general repairs made if FDGiA / contributions available</li> </ul>	<ul style="list-style-type: none"> <li>£1mill + per 50m stretch</li> </ul>
Failure of sections of the East Wittering and Bracklesham defences (medium to high risk).	<ul style="list-style-type: none"> <li>Monitor existing defences and make necessary repairs within revenue budgets;</li> <li>Develop beach recycling to maximise standard of protection provided.</li> </ul>	<ul style="list-style-type: none"> <li>Up to £25k per bay;</li> <li>£ Variable</li> </ul>
Weather Conditions delaying construction activities (low risk).	<ul style="list-style-type: none"> <li>Ensure contract deals with possible delays adequately.</li> <li>5-year programme gives greater flexibility to deal with delays.</li> </ul>	<ul style="list-style-type: none"> <li>Avoids costs</li> </ul>
Community opposition to shingle deliveries (low risk – lorry deliveries successfully achieved in first 5 years).	<ul style="list-style-type: none"> <li>Consult with community throughout BMP process;</li> <li>Identify less disturbing methods of supplying shingle;</li> <li>Carefully plan timing of works to avoid unsociable hours.</li> </ul>	<ul style="list-style-type: none"> <li>In-house - sunk</li> </ul>
Environmental Concerns leading to delays (low risk).	<ul style="list-style-type: none"> <li>Consult with Natural England throughout the BMP process (particularly whilst writing the BMP) to address any issues.</li> </ul>	<ul style="list-style-type: none"> <li>Part of BMP process.</li> </ul>
Unexpected draw down and non-recovery of beaches due to adverse weather	<ul style="list-style-type: none"> <li>Use contingency to boost beach profiles in order to maintain standard of protection</li> </ul>	<ul style="list-style-type: none"> <li>Up to £125k</li> </ul>

### Safety Plan

7.2.2 Construction shall meet CDM2015 regulations and the contract for construction works will involve appointing a lead designer & lead contractor where applicable to oversee the works (included in estimated consultancy costs). All appropriate risk assessments and method statements will be completed. A health and safety file will be developed before and during the contract, and will remain in force and be held by the Council after the works have been completed.

Flood risk management scheme –  
 application for grant funding  
 Risk management authority (RMA)



7.3

Please read through this form and the guidance notes that came with it. Please write clearly in the answer spaces.

Please send a signed copy of this form (unless it already forms part of the project appraisal report (PAR)) to the Area Flood and Coastal Risk Manager for approval. Their contact details are on previous letters we have sent you.

- Our general conditions for grants are set out in our grant memorandum. The grant process does not make or form part of the contract between you and us.
- We will not pay a grant for work you begin without our approval. We do not pay a grant for the cost of maintenance.

**Contents**  
 Part A Scheme details  
 Part B Certificate of the authority  
 Part C The Data Protection Act 1998  
 Part D Declaration  
 Part E Contact us

**Part A Scheme details**

**A1 Name and address of your authority**

Name  
 Chichester District Council

Address  
 1 East Pallant House  
 Chichester

Postcode PO19 1TY

**A2 National project number (medium-term plan reference number)**

SOS005C/009A/30CA

**A3 Name of the scheme and its location**

Name  
 Selsey, Bracklesham and East Wittering Beach Management Plan yrs. 2016-2021

Location  
 Selsey, Bracklesham & East Wittering

**Part A Scheme details, continued**

**A4 Is this a private scheme to be carried out on a main river not maintained by an Internal Drainage Board or local authority?**

Yes  Please give details below  
 No

**A5 If you've answered no in question A4, how is the project being funded?**

Type	Amount (£ thousands)	Percentage (%)
Flood Defence Grant in Aid (FCERM GiA)	1250	100
Local levy		
Own revenue		
External contribution		
Total contribution		



## Part A Scheme details, continued

If external contribution, please give details.

N/A

### Internal Drainage Boards only

If funded by a loan:

Over what period do you need the loan?

\_\_\_\_\_

Have you enclosed a formal application for a loan approval from Defra?

Yes

No

### A6 Estimated project costs (taken from your PAR) and grant applied for (not including maintenance)

		Project costs (£ thousands)	Grant applied for (include local levy) (£ thousands)
(a)	Preliminary investigations	10	10
(b)	Instrumentation and machinery		
(c)	Construction work	1000	1000
(d)	Land purchase		
(e)	Compensation		
(f)	Staff salaries and costs	25	25
(g)	Professionals' and consultants' fees	100	100
(h)	Other costs (please specify)		
(i)	Contingencies (please specify)	125	
(j)	Total estimated costs	1250	
(k)	Total grant applied for		1250

Note: the total grant applied for (box k) should be equal to the amount of the FCERM GiA plus the local levy contribution in table A5.

(Contingency funds are noted for management purposes – see section 12 of the grant memorandum.)

### A7 Other information, such as the latest partnership funding score percentage (this is often more than 100%)

Partnership funding score: 152%

### A8 Who will the work be done by?

Direct labour

Contract

Both

Please give details of who is doing the work.

Work will be completed by either our framework consultant (Royal Haskoning DHV), our framework contractor (JTM Mackley) or appointed via competitive framework tender.

## Part C The Data Protection Act 1998

We, the Environment Agency, will process the information you provide so that we can deal with your application, make sure you keep to the conditions of the licence, permit or registration, and process renewals.

We may also process or release the information to:

- offer you documents or services relating to environmental matters;
- consult the public, public organisations and other organisations (for example, the Health and Safety Executive, local authorities, the emergency services, the Department for Environment, Food and Rural Affairs) on environmental issues;
- carry out research and development work on environmental issues;
- provide information from the public register to anyone who asks;
- prevent anyone from breaking environmental law, investigate cases where environmental law may have been broken, and take any action that is needed;
- assess whether customers are satisfied with our service, and to improve our service; and
- respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows).

We may pass the information on to our agents or representatives to do these things for us.

## Part D Declaration

### D1 I have met the responsibilities set out in the following regulations.

SI 1999 number 1783 Land Drainage Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999, as amended to date.

### D2 I confirm the following:

This application is for the scheme set out in the project appraisal report (PAR) dated (DD/MM/YYYY)

This application is made to the Environment Agency, for grant funding under the Flood Management Act 2010.

I accept the conditions set out in the grant memorandum.

I also accept that the Environment Agency do not accept legal liability or agree to take on any of the risk management authority's obligations.

I have attached all necessary supporting documents to this form and we meet the conditions of the grant memorandum.

Our board or cabinet have agreed the work will start on date (DD/MM/YYYY)

As far as I know, the details that I have given on this form are true and complete.

## Part D Declaration, continued

Warning

If you make a false or inaccurate statement you may lose your entitlement to grant funding.

Chief Executive Officer's signature

\_\_\_\_\_

Date (DD/MM/YYYY)

\_\_\_\_\_

Name

Title (Mr, Mrs, Miss, Other) \_\_\_\_\_

First name \_\_\_\_\_

Last name \_\_\_\_\_

Job title

\_\_\_\_\_

Contact numbers, including the area code

Phone \_\_\_\_\_

Fax \_\_\_\_\_

Mobile \_\_\_\_\_

Email \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contact name (for queries)

\_\_\_\_\_

Phone number

\_\_\_\_\_

## Part E Contact us

If you need help filling in this form, please contact the person who sent you it or contact us as shown below.

Grant Administration Team  
Environment Agency  
Manley House  
Kestrel Way  
Exeter  
EX2 7LQ

Telephone: 01392 352300

Email: [laidbfinance@environment-agency.gov.uk](mailto:laidbfinance@environment-agency.gov.uk)

Website: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

**Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.**

For Environment Agency use



7.4

only

Note for AFCRM: Please send this FCERM2, together with the PAR, to the grant administration team for approval, if there is not an FCERM2 already included in the PAR.

This scheme, with a total estimated cost of  
£ \_\_\_\_\_ (box (j), section A6),  
is approved on behalf of the Environment Agency for grant  
funding of

£ \_\_\_\_\_ (box (k), section A6)

Name of Area Flood and Coastal Risk Manager

\_\_\_\_\_

Job title

\_\_\_\_\_

Signature

\_\_\_\_\_

Date (DD/MM/YYYY)

\_\_\_\_\_

Name of chair of Project Approval Board or Large Project  
Review Group

\_\_\_\_\_

Signature

\_\_\_\_\_

Date (DD/MM/YYYY)

\_\_\_\_\_

## Appendix A Project report information sheet

### A.1 General Details

Authority project ref (as in medium term plan)

SOS005C/009A/30CA

Project name  
(60 characters  
max.)

Selsey & East Wittering BMP 2016 -2021

Name of authority

Chichester DC

Defra reference (if known)

Name

Title Mr

David

Lowsley

Is the project to carry out emergency work?

Yes

No

Strategy plan reference

Pagham to East Head CDS

River basin management plan

N/A

System asset management plan

N/A

Shoreline management plan

North Solent SMP  
Beachy Head to Selsey Bill SMP

Project type (list below)

Coast Protection

Shoreline management study/ preliminary study/ strategy plan/prelim. works to strategy/ project within strategy/stand-alone project/  
Strategy implementation/sustain sos. coast protection/sea defence/tidal flood defence/non-tidal flood defence/flood warning  
Tidal/flood warning - fluvial/special

### A.2 Contract details

Estimated start date of works or study (DDMMYY)

01-10-16

Estimated time work or study will take to complete\*

53

\*In months

Contract type\*

Framework

(\*Direct labour, framework, non-framework, design/construct )

### A.3 Costs

Application (£000's)

PAR preparation

10

Capital grant for Environment Agency approval

1250

Total whole-life costs (cash)

8,652

For breakdown of costs see Table in Section 5.4

### A.4 Contributions

Own resources

0

Windfall contributions

0

Deductible contributions

0

Loans

0

European regional development fund (ERDF) Grant

0

Other items not included

0

### A.5 Location (to be completed for all projects)

EA region or area of project site (all projects)	Solent & South Downs	
Name of watercourse (fluvial projects only)	N/A	
District council Area of project (all projects)	Chichester DC	
Grid Reference (all projects)	SZ855922	(OS Grid reference of typical midpoint of project in form ST064055)

**A.6 Description**

Specific town/district to benefit from the project

Brief project description, including essential elements of the project or study (240 characters maximum)

Undertake Beach Management Plan works, involving recycling and recharging shingle beaches, improving groynes and other defence assets to retain beaches and delay the need for major capital works.

**A.7 Details**

Design standard (chance per year)	1 in 75	years
Existing standard of protection (chance per year)	Variable depending on frontage	years
Design life of project	5	years
Fluvial design flow (fluvial projects only)	N/A	m <sup>3</sup> /s
Tidal design level (coastal and tidal projects only)	TBC	m
Length of river bank or shoreline improved	8200	m
Number of groynes (coastal projects only)	188 (existing)	
Total length of groynes* (coastal projects only)	9500 (existing)	m
Is it a beach management project?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Is it a water level management project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Defence type (embankment, walls, storage etc.)	Beach and retaining structures	

\*Note this should be the total length of all groynes added together (ignore any river training groynes)

**A.8 Further agreements**

Maintenance agreements	<input checked="" type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
EA region permission	<input checked="" type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
Non-statutory objectors	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(For coastal schemes fill in form CPA1 and CPA2)
Date objections cleared (DDMMYY)	<input type="text"/>	
Other agreements	<input type="text"/>	
	<input checked="" type="checkbox"/> Does not apply	<input type="checkbox"/> Received

**A.9 Environmental considerations**

Natural England letter (or equivalent)	Letter (Appendix D)
Date received (DDMMYY)	<input type="checkbox"/> Does not apply <input checked="" type="checkbox"/> Received
	<input type="text" value="07/10/05"/>

### A.10 Sites of international importance

Answer 'Yes' if the project is within, next to or could affect the designated site

Special protection area (SPA)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Special area of conservation (SAC)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Ramsar site	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
World Heritage Site	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Other (for example, biosphere reserve)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### A.11 Sites of national importance

Answer 'Yes' if the project is within, next to or could affect the designated site

Environmentally sensitive areas (ESA)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Site of special scientific interest (SSSI)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
National or regional landscape designation	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
National park or the broads	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
National nature reserve	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Areas of Outstanding Natural Beauty (AONB), Restoring Sustainable Abstraction (RSA), Regional Screening Coordinator (RSC)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Scheduled ancient monument	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Other designated heritage sites	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### A.12 Other environmental considerations

Listed structure consent	<input checked="" type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
Has a water level management plan been prepared?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Does the project need a Food and Environmental Protection Act (FEPA) licence?	<input checked="" type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received

### A.13 Compatibility with other plans

Shoreline management plan	<input type="checkbox"/> Yes <input type="checkbox"/> not apply	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Does
River basin management plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> not apply	<input type="checkbox"/> No	<input type="checkbox"/> Does
Catchment flood management plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> not apply	<input type="checkbox"/> No	<input type="checkbox"/> Does
Water level management plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> not apply	<input type="checkbox"/> No	<input type="checkbox"/> Does

### A.14 SEA or environmental impact assessment

Strategic environmental assessment (SEA)	<input type="checkbox"/> Statutory required <input type="checkbox"/> not apply	<input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Does
Environmental impact assessment (EIA)	<input type="checkbox"/> Yes (schedule 1) <input type="checkbox"/> not apply	<input type="checkbox"/> Yes (schedule 2)	<input checked="" type="checkbox"/> Does
SEA or EIA status	<input checked="" type="checkbox"/> Scoping report prepared <input type="checkbox"/> Final	<input type="checkbox"/> Draft	<input type="checkbox"/> Draft advertised



Other agreements

	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received
	<input type="checkbox"/> Does not apply <input type="checkbox"/> Awaited	<input type="checkbox"/> Received

**A.15 Benefit Type**

**Local Authorities only;**

For projects done under the Coast Protection Act 1949 please separately identify:

FRM = Benefits from reduction of asset flooding risk, or

CERM = Benefits from reduction of asset erosion risk.

Benefit type (list below)

CM

**DEF:** reduces risk (contributes to Defra SDA 27); **CM:** capital maintenance; **FW:** improves flood warning; **ST:** study; **OTH:** other projects

**A.16 Land area**

Total land area to benefit			Ha
Present use of land	FRM	CERM	
Agricultural			Ha
Developed			Ha
Environmental or amenity			Ha
Scheduled for development			Ha

**A.17 Property and infrastructure protected**

Residential	FRM	CERM	
Number of properties	429	78	
Value	4552	4153	£ thousands

Commercial or industrial			
Value			£ thousands

Critical infrastructure			
Value			£ thousands

Key civic sites


Value

£ thousands

Other (description below)


Value

£ thousands

Description

--

**A.18 Costs and benefits**

Present value of total project whole life costs (see note)

8,652

£ thousands

(include all costs, including those not eligible for a grant)

Will the project meet the statutory requirement?

Yes

No

FRM

CERM

Present value of residential benefits

--	--

£ thousands

Present value of commercial and industrial benefits

--	--

£ thousands

Present value of public infrastructure benefits

--	--

£ thousands

Present value of agricultural benefits

--	--

£ thousands

Present value of environmental and amenity benefits

--	--

£ thousands

Present value of total benefits (FRM and CERM)

167,300	(identified in PEHCDS)
---------	------------------------

£ thousands

Net present value

--	--

£ thousands

Benefit : cost ratio

19.34	
-------	--

Base date for estimate (DDMMYY)

011215