

West Wight Coastal Flood and Erosion Risk Management Strategy

SUMMARY BOOKLET
FINAL
2016



CAPITA | AECOM





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This Strategy was produced for Isle of Wight Council with technical assistance from the engineering and environmental consultant CAPITA | AECOM.



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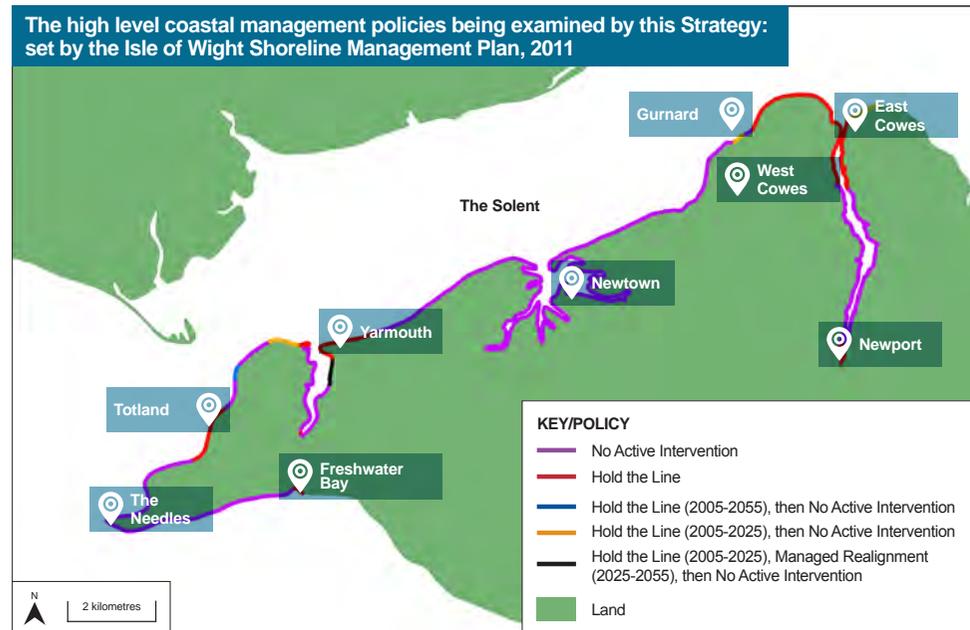
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This booklet provides a concise overview of the Coastal Strategy and a summary of the preferred options for managing coastal flood and erosion risks in the area over the next 100 years.

For more detailed information on the Strategy please see the main document and technical appendices. These documents are available online at www.coastalwight.gov.uk and via www.iwight.com.



Background

The Strategy covers an 84km (52 mile) frontage running from Freshwater Bay clockwise round to Old Castle Point, East Cowes. The frontage features a wide variety of natural, rural and urban landscapes including: the sheltered estuarine environments of the Western Yar, Newtown Estuary and the Medina, the bays of Freshwater, Totland, Colwell, Thorness and Gurnard, the headlands around Cowes and then the scenic exposed open coast around the Needles.

Three of the Island's large urban areas are within the Strategy frontage; Cowes, East Cowes and Newport (key employment centres). Totland, Yarmouth and Freshwater are the main settlements in the west of the Island, also all located on the coast.

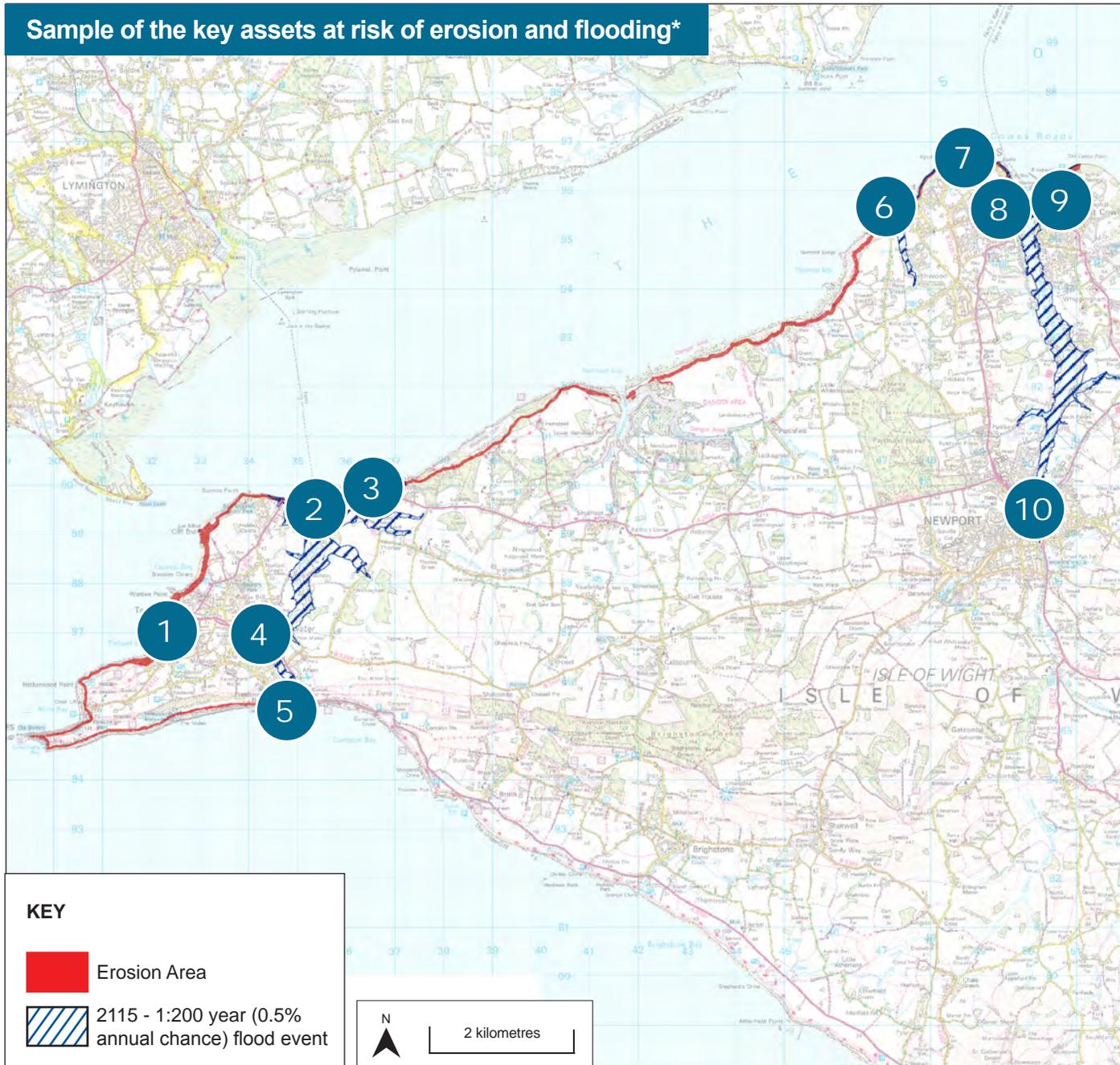
In a planning context the Isle of Wight is unique, being an island with a large proportion of environmental designations, a coastal and maritime economy, and a fundamental reliance on ferry ports and coastal roads as its key strategic transport links. With such a diverse coastline and range of facilities, tourism is a key industry for the Isle of Wight. Residents and visitors are well served by a number of ferry routes with East Cowes and Yarmouth hosting two of the three vehicle ferry links to the Isle of Wight, plus a key passenger ferry terminal in West Cowes.

Why do we need the Strategy?

There is a wide range of existing coastal defences around the West Wight frontage which help prevent erosion and reduce flood risk. If sea levels rise as currently predicted the standard of protection of these defences will fall, increasing the risk of flooding to areas around the coast. As well as the threat of increasing flood risk, part of the frontage is also at threat from coastal erosion. Whilst existing coastal defences minimise this risk, many of these aging defences were built in times of greater economic prosperity and the future maintenance or replacement of these structures provides a significant problem in these more challenging economic times. If our coastline is not managed effectively in the future, the risk of coastal flooding and erosion is set to increase significantly if sea levels rise as expected.

WITHOUT ACTIVELY IMPLEMENTING MEASURES TO MANAGE THESE RISKS IN ROBUST AND STRATEGIC WAYS, THERE WILL BE OVER 4,000 PEOPLE AND 1,500 PROPERTIES AT INCREASED RISK BY 2115.

Sample of the key assets at risk of erosion and flooding*



1. Totland
at risk of erosion



2. Yarmouth
at risk of flooding and erosion



3. Bouldnor Road
at risk of erosion



4. Freshwater
at risk of flooding



5. Freshwater Bay
at risk of flooding and erosion



6. Gurnard Luck
at risk of flooding and erosion



7. Gurnard - Cowes
at risk of erosion, landslide reactivation and flooding



8. Cowes
at risk of flooding and erosion



9. East Cowes
at risk of flooding and erosion



10. Newport
at risk of flooding



*Flooding extent from an event with a 0.5% chance of occurring at 2115 assuming current defences are in place

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In addition to people and property, also at risk are many other important features including ferry terminals linking the island to the mainland, coastal footpaths, major link roads, key services infrastructure, heritage assets, listed buildings, environmentally designated sites, cyclepaths and beaches used by residents and as visitor attractions. A sample of some of the major assets at risk is shown in the map above.

With all of the interacting and competing pressures on the coastline the **primary objective of the Strategy is to reduce the risk of coastal flooding and erosion to people, the developed and natural environment.**

It achieves this by identifying the preferred options to manage and reduce these risks in a cost effective, holistic and sustainable manner.

How the Strategy was developed

The Strategy has been developed over a two year period. During this time a number of detailed technical studies have been completed along with extensive engagement and liaison with key stakeholders to help shape the Strategy and build support and commitment for the preferred options. The Strategy's development has been overseen by a project steering group.

In order to develop robust and sustainable flood and erosion risk management options it was necessary to gain a detailed understanding of the key features, risks, issues and opportunities along the coastline.

A series of potential management options were identified at the local scale; this was achieved by dividing the coastline into 32 Option Development Units (ODUs). The identification of potentially suitable local measures was informed by technical studies, site walkovers and stakeholder engagement. This process resulted in a 'toolbox' of local measures being chosen in order to implement the preferred strategic approaches to managing coastal flood and erosion risk.

Six Strategy Management Zones (SMZs) were developed (with sub zones, where required) in order to appraise strategic level management options. These are shown on the map on page 7. The key features of each zone, and the properties at risk under a hypothetical 'Do Nothing' Scenario are summarised in the table on page 8. Strategic level management options included options such as 'Maintain', 'Sustain' or 'Improve' the standard of protection through combining packages of local measures from each ODU. These strategic options were then appraised against technical, economic, social and environmental criteria. The preferred options for consultation were chosen on the basis of this evaluation.

The draft Strategy underwent a three-month period of public consultation in Spring 2016 prior to being finalised.

The preferred approach is presented for each Management Zone in the following pages. For more detailed information on each area, please see the Main Strategy Report and Appendices available at www.coastalwight.gov.uk and via www.iwight.com.



Totland Bay



Undefended Solent Shoreline, Thorness Bay



High tide at Colwell Bay



View east along Gurnard Bay Esplanade

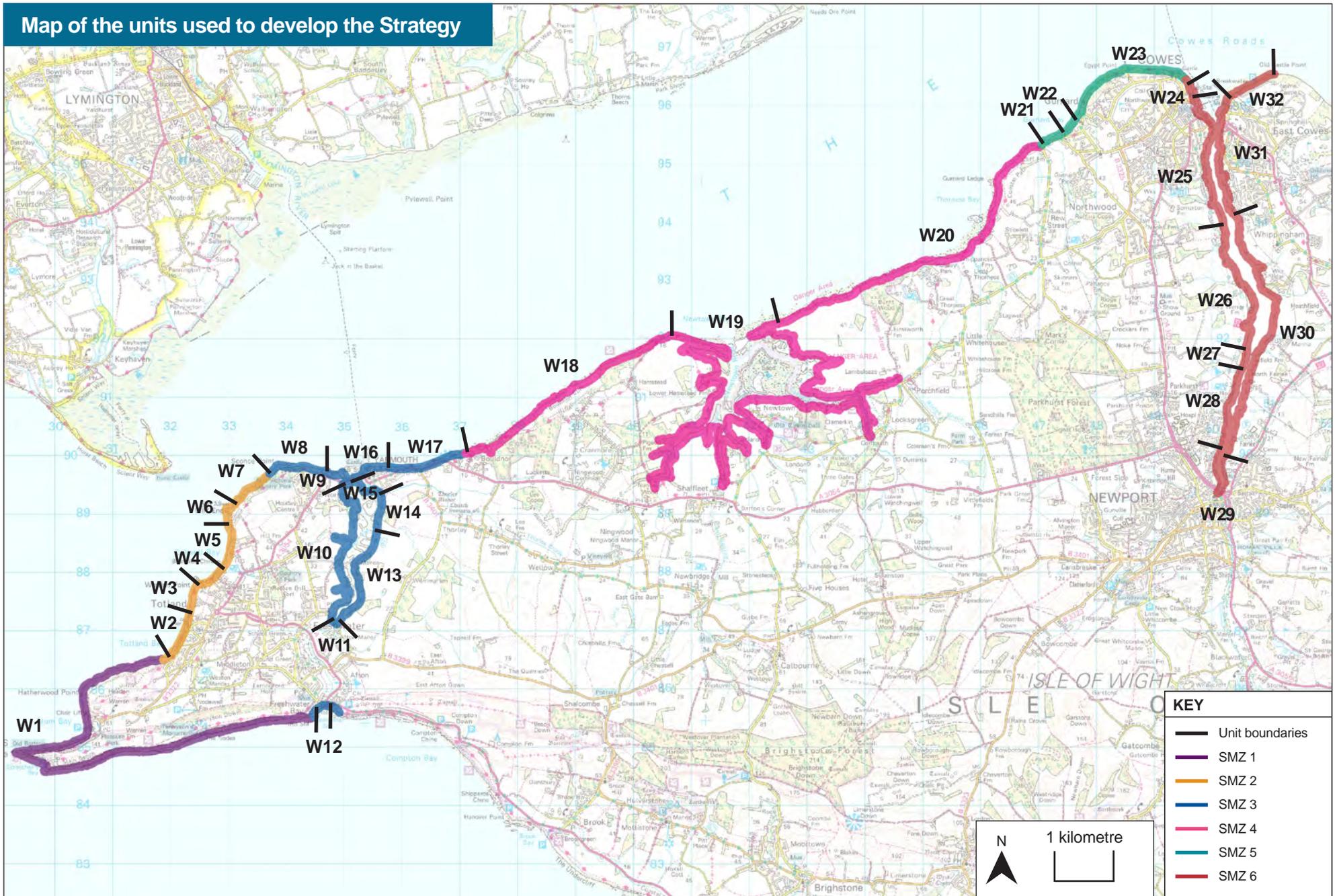


View looking South over Yarmouth and Western Yar Valley



Aerial view over Cowes

Map of the units used to develop the Strategy



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Summary of the Strategy Management Zones and the properties at risk under a hypothetical 'Do Nothing' scenario

SMZ	SMZ Location	ODUs	Zone Characteristics	Total residential and commercial properties at risk of flooding (Do Nothing)				Total residential and commercial properties at risk of erosion (Do Nothing)			
				2015	2025	2055	2115	2015	2025	2055	2115
1	Needles Headland	W1	Undefended, cliffed coastline, exposed to large waves, small number of assets at risk from erosion at the clifftop, no flood risk, leisure / recreational use	0	0	0	0	0	1	7	35
2	Totland and Colwell Bays	W2 to W7	Cliffs subject to landsliding, residential and commercial properties at risk of erosion, recreational area, no flood risk	0	0	0	0	0	4	86	394
3a	Yarmouth coast	W8 to W9, W15 to W17	Yarmouth is a key residential area and town centre, significant flood and erosion risks, roads that provide access to other parts of the Island at risk from flooding and erosion, ferry terminal provides link to mainland	41	48	47	77	0	0	45	194
3b	Western Yar Estuary	W10, W13 and W14	Recreation area and farmland, cyclepath situated on the eastern side of the estuary, predominantly undefended, small and localised flood risks, mostly sheltered and estuarine	16	17	16	19	0	0	1	2
3c	Freshwater	W11 and W12	Residential and commercial properties at risk from flooding, low lying valley at flood risk between the Causeway and Freshwater Bay, Freshwater Bay exposed to large swell waves that can result in overtopping of the defences, erosion risk at Freshwater Bay, A3055 at risk of flooding	28	35	47	77	0	0	2	16
4	Newtown Coast	W18 to W20	Open space, undefended, environmentally important area, small localised risk of erosion, no flood risk	0	0	0	0	0	1	12	59

Property numbers based on 1:200 year (0.5% chance) flood event.
Total damages are whole life Present Value figures under a hypothetical 'Do Nothing' scenario.

Summary of the Strategy Management Zones and the properties at risk under a hypothetical 'Do Nothing' scenario

5a	Gurnard Luck and Gurnard cliff	W21 to W22	Significant risk of flooding at Gurnard Luck, erosion risk because of the close proximity of properties to the coastline, existing private defences have relatively low crest levels	43	43	36	8	0	0	19	54
5b	Gurnard to Cowes Parade	W23	The developed coastal slopes have potential for landslide reactivation, erosion is more of a significant risk than flooding, there are existing sea wall defences, overtopped at low points at high tide events	4	6	8	0	0	0	44	269
6a	Cowes and East Cowes	W24 to W25 and W31	Cowes and East Cowes are key urban centres, significant residential and commercial properties at risk from both flooding and erosion, waterfront access is important, two ferry terminals provide links to the mainland	317	345	372	423	0	0	98	333
6b	Medina Estuary (and East Cowes Outer Esplanade)	W26 to W28, W30, W32	Land is predominantly farmland and recreational land, small landslides have blocked access near Old Castle Point, few properties at risk from flooding and erosion	13	15	28	61	0	0	4	9
6c	Newport Harbour	W29	Waterfront access is important, commercial and industrial properties close to the waterfront and at risk of flooding, if the harbour walls failed a number of properties are at risk of damage	16	22	6	30	0	0	29	39
Total				478	531	560	695	0	6	347	1404

Property numbers based on 1:200 year (0.5% chance) flood event.
Total damages are whole life Present Value figures under a hypothetical 'Do Nothing' scenario.

▼ The following sections provide the Preferred Options for each Strategy Management Zone (SMZs 1-6c) ▼

SMZ 1 Preferred Strategic Option: Allow natural processes to continue, with privately funded maintenance of existing assets permitted (subject to gaining the necessary consents).

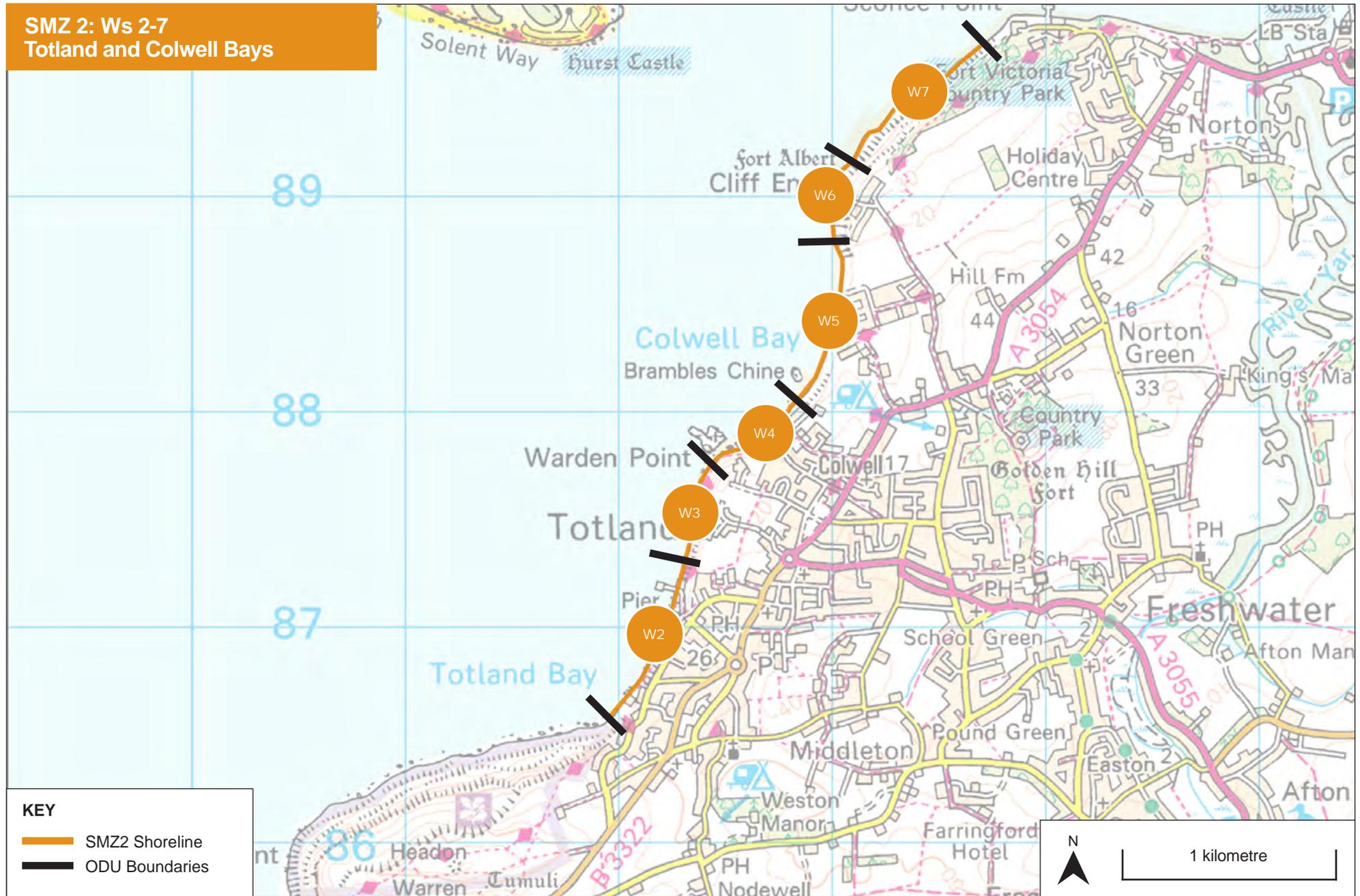
PV Cost*	PV Benefits*	Benefit:Cost ratio
£0	£0	N/A

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences



Allow natural processes to continue, with privately funded maintenance of existing assets permitted (subject to gaining the necessary consents). No new defences permitted in currently undefended areas. Health and Safety obligations relating to eroding coastline to be met.

**SMZ 2: Ws 2-7
Totland and Colwell Bays**



ODU W 2-7 boundaries in SMZ 2

SMZ 2 Preferred Strategic Option: Maintain coastal access as long as possible and ensure health and safety compliance. Develop Coastal Change Management Area Plan and adaptation to be supported by the planning process.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£308,000	£931,000	3.0 : 1

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

W2-4 & 6 Totland and Colwell Bays



Maintain coastal access for as long as possible (and ensure health and safety compliance) by maximising the life of the existing defences within the limited maintenance funding available. Privately funded maintenance of existing private assets will be permitted (subject to gaining the necessary consents).

Further landslips are likely to occur over time and any future larger-scale repairs required will be assessed on a case-by-case basis.

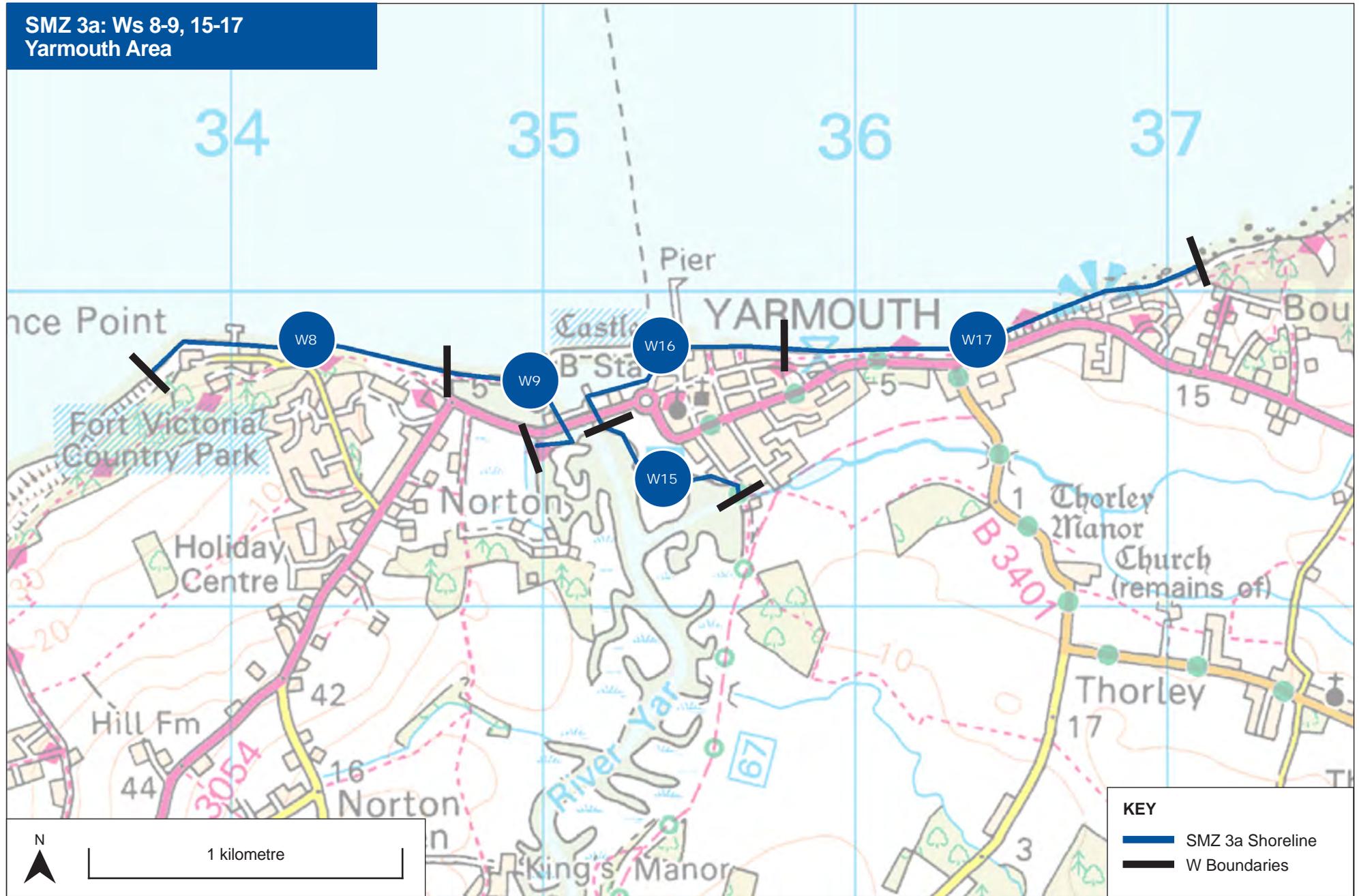
Upgrade or replacement of defences is not planned, due to a lack of currently available funding. A Coastal Change Management Area Plan will therefore be developed and adaptation supported by the planning process.

W5 & W7 Central Colwell Bay and Fort Victoria Country Park



Allow natural evolution of the coast to continue. Ensure health and safety compliance.

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ODU W8,9,15,16 & 17 boundaries in SMZ 3a

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SMZ 3a Preferred Strategic Option: Use Temporary Flood Barriers to manage and reduce flooding to areas at significant risk by sustaining a 1 in 75 year Standard of Protection. Prevent erosion to critical infrastructure serving the town and the West Wight. From 2055, if funding can be secured, raise / implement new defences (bunds and floodwalls) to manage long term increase in flood and erosion risk posed by sea level rise.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£6,560,000	£31,993,000	4.9 : 1

KEY					
 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area	
 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences	

W8 Fort Victoria and Norton



No planned publicly funded investment in coastal defences in this area, but private landowners may wish to undertake maintenance of their existing defence structures, subject to gaining the necessary consents. Ensure health and safety compliance where relevant.

W9 Norton Spit



Maintain existing assets. Yarmouth Harbour Authority to maintain breakwater with refurbishment and upgrades if funding available (subject to gaining the necessary consents). Funding of maintenance and defence upgrades will need to be found from other sources than GiA.

W15-16 Thorley Brook to Yarmouth Common



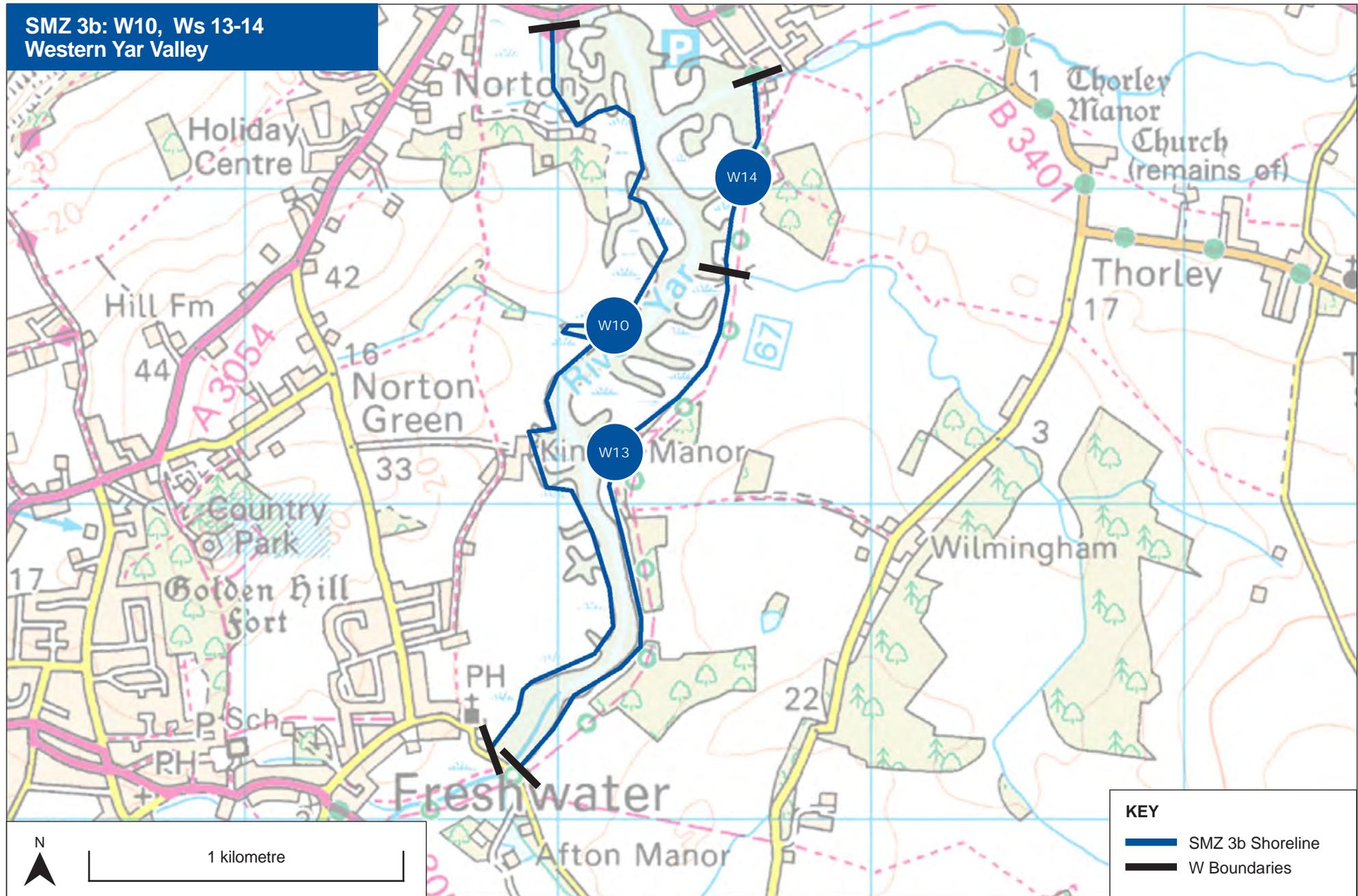
Manage and reduce flooding to areas at significant risk with temporary flood barriers in the short to medium term. GiA likely to provide some funding for temporary flood defences in the short to medium term. Continued maintenance or upgrading of private defences is encouraged (subject to gaining the necessary consents). In the long term raise or implement new defences (bunds and floodwalls) to manage long term increasing flood and erosion risk posed by sea level rise; limited GiA likely for longer term defences and other sources of funding will need to be found.

W17 Yarmouth Common to Port La Salle



A refurbishment scheme for the existing defences will be required to prevent erosion and protect the strategically important Bouldnor Road, utilities corridor serving Yarmouth, and to prevent significant environmental impacts of breaching into Thorley Brook. Some GiA funding potential but additional funding will need to be found from other sources. At Port la Salle and the eastern end of this unit, privately funded maintenance or upgrading of private defences will be permitted (subject to the necessary consents).

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ODU W10,13 & 14 boundaries in SMZ3b

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SMZ 3b Preferred Strategic Option: Maintain cycle and footpath access and health and safety compliance, and if funding can be secured, managed realignment at Thorley Brook between 2025 and 2055 to provide environmental mitigation and create intertidal habitat.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£3,824,000*	£1,271,000	0.3 : 1

*Mainly managed realignment and environmental costs

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

W10 & 13 | Western Yar estuary

2015-2025	2025-2055	2055-2115	
			

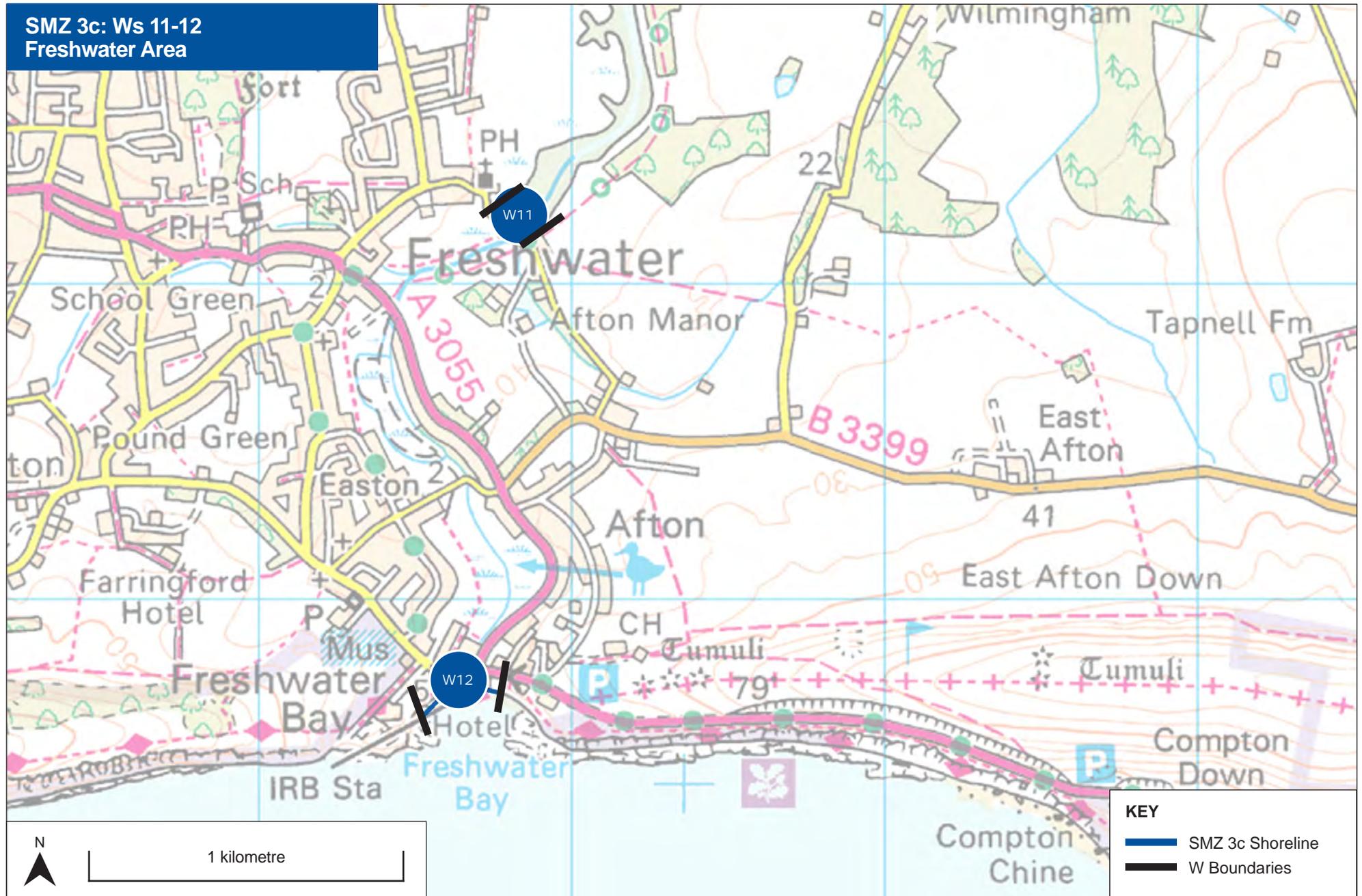
Estuary to adapt naturally to sea level rise. Maintain coastal access and ensure health and safety compliance, with privately funded maintenance of existing assets permitted (subject to gaining the necessary consents).

W14 | Thorley Brook and Barnfields Stream

2015-2025	2025-2055	2055-2115	
			

Maintenance of existing defences and undertake planning for future managed realignment scheme in the medium term. From 2025-2055 implement Managed Realignment / habitat creation at Thorley Brook as required to deliver environmental mitigation and compensatory habitat, if funding can be secured. New flood setback defences to reduce flood risk to people and property to be delivered as part of the scheme.

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ODU W11 and 12 boundaries in SMZ3c

SMZ 3c Preferred Strategic Option: Maintenance of existing structures at Freshwater Bay and the Causeway. Recommend Property Level Protection to the residential properties at significant flood risk. Then, refurbishment of existing defences at Freshwater Bay at end of design life to mitigate erosion risk and implement new defences at Freshwater Village in the long term to improve the standard of flood protection.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£1,450,000	£5,289,000	3.6 : 1

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

W11 | The Causeway

2015-2025	2025-2055	2055-2115	
			

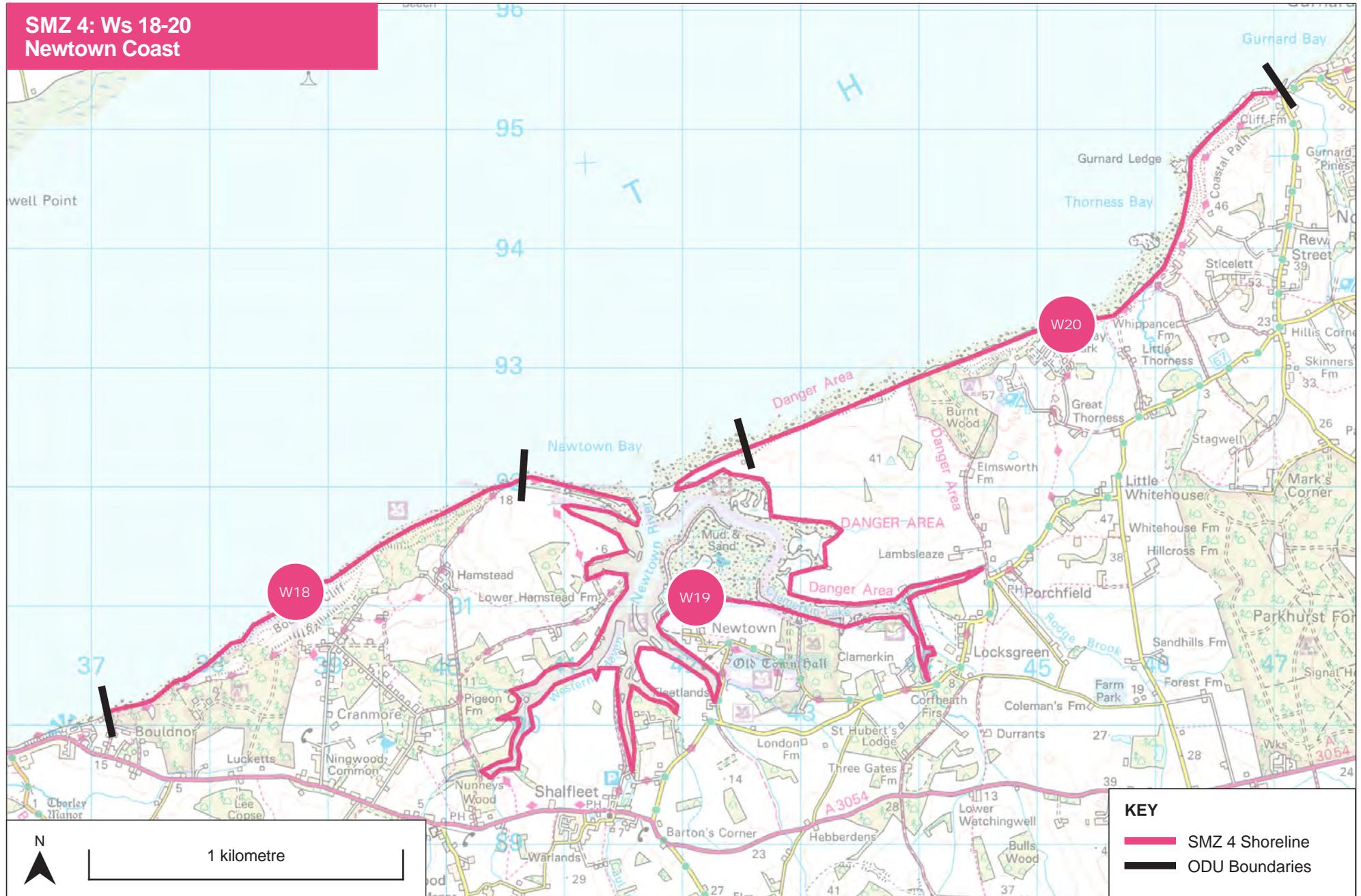
At ODU W11, the Causeway, the preferred option is for maintenance of the existing defences for the first time epoch of the Strategy alongside privately funded PLP to properties (8 properties) in Freshwater Village to address the localised flood risk within this zone. In the medium to long term, the existing defences at the Causeway should be refurbished and it is recommended that new defences are installed at Freshwater Village in the long term to prevent tidal flooding to properties near the A3055 (subject to available funding). Ongoing refurbishment of the defences at the Causeway will need to continue into the longer term, whilst maintenance of the new defences at Freshwater Village will also be required. In future appraisals, a potential managed realignment area from the Causeway westwards should be investigated in more detail to establish the feasibility of creating habitat in this area and also the viability of linking this into a wider flood risk reduction scheme in the area.

W12 | Freshwater Bay

2015-2025	2025-2055	2055-2115	
			

At Freshwater Bay in the short term the preferred option recommends ongoing maintenance of the existing seawall in front of the A3055. After this, in the medium and long term, it is likely that ongoing capital refurbishment will be required for this structure at it's current height (primarily for erosion protection and to prevent a breach into the low-lying Western Yar Valley). There is likely to be limited Grant in Aid funding available for these works so contributions will be required to fund this scheme.

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ODU W18-20 boundaries in SMZ4

SMZ 4 Preferred Strategic Option: Allow natural processes to continue. Privately funded maintenance of existing assets permitted (subject to gaining the necessary consents).

PV Cost*	PV Benefits*	Benefit:Cost ratio
£0	£0	N/A

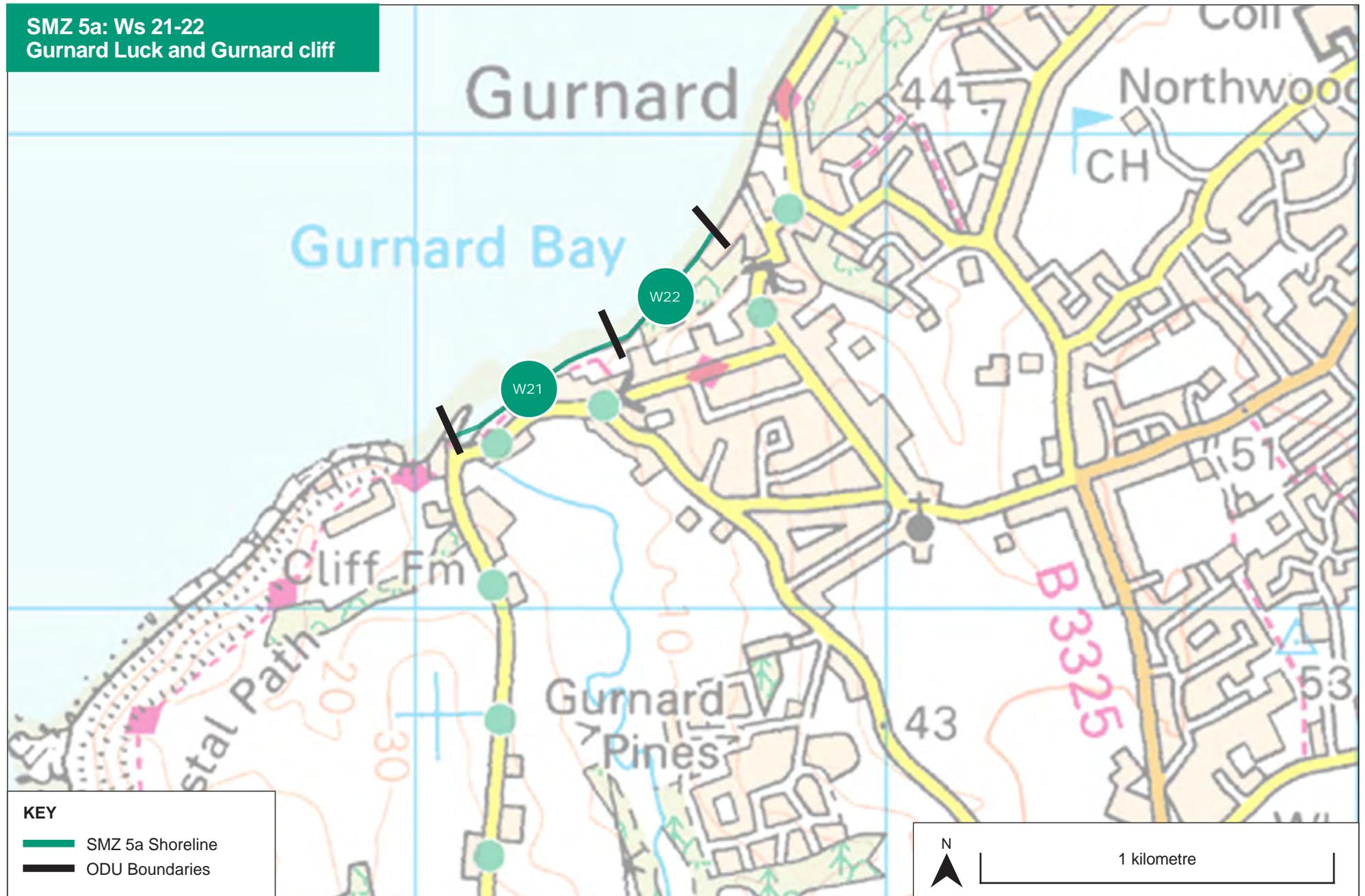
KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

W18-20 | Bouldnor to West of Gurnard Bay



Allow natural processes to continue, with privately funded maintenance of existing assets permitted (subject to gaining the necessary consents). No new defences permitted. Health and Safety obligations relating to eroding coastline to account for.

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**SMZ 5a: Ws 21-22
Gurnard Luck and Gurnard cliff****ODU W21-22 boundaries in SMZ 5a**

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SMZ 5a Preferred Strategic Option: Privately funded community and property level flood resilience and adaptation at Gurnard Luck (up to 2055). Private maintenance of existing assets permitted (subject to obtaining the required consents). In the longer term accept that flood risk will increase due to sea level rise but provide a Coastal Change Management Area Plan to support the No Active Intervention policy. Do Minimum (maintain health and safety) at Gurnard cliff.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£239,000	£1,637,000	6.8 : 1

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences



In the short term community and property level resilience and adaptation measures are recommended to reduce flood risk to a small number of properties. Due to lack of available funding, it is likely that these measures will need to be privately funded.

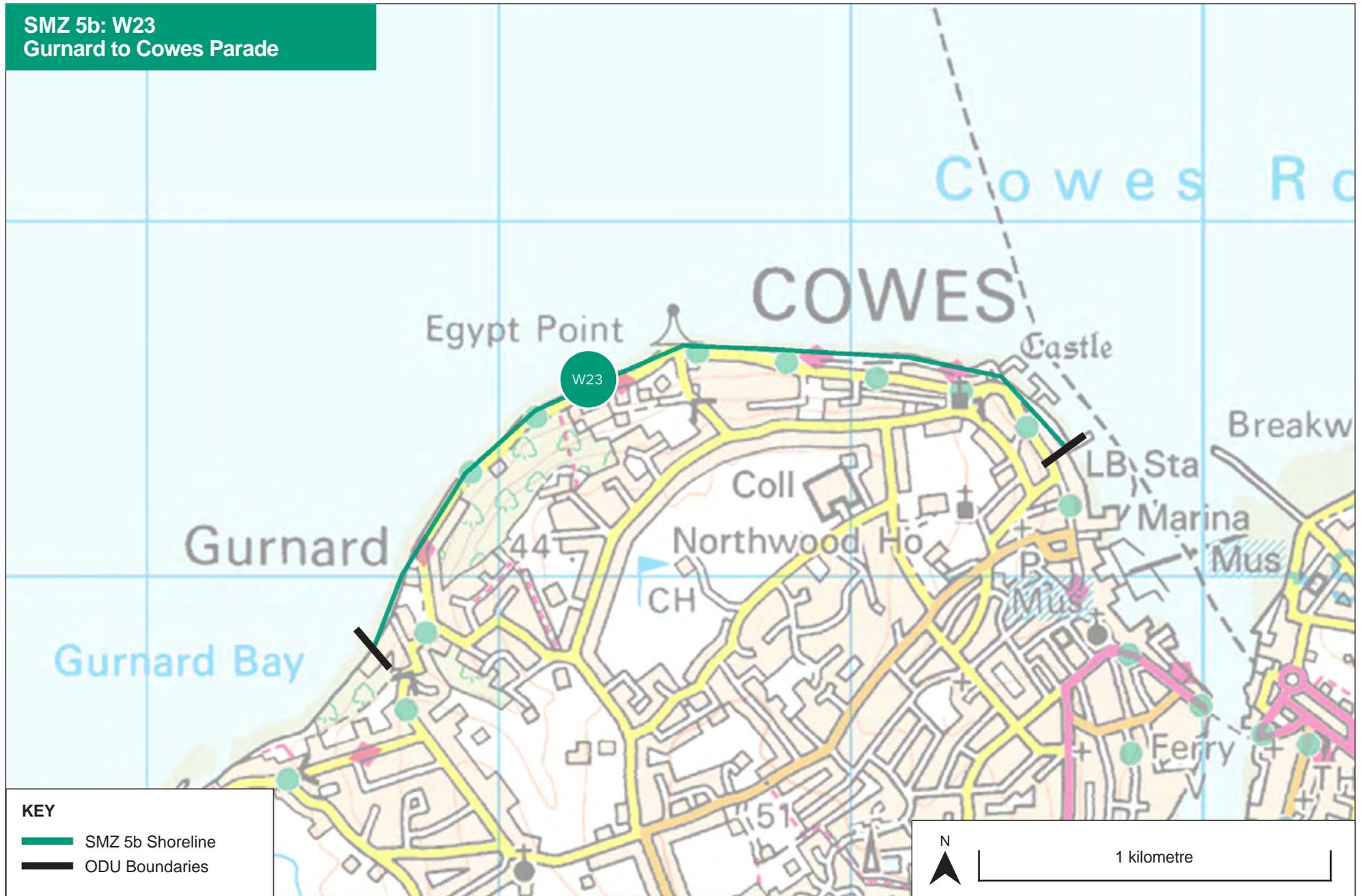
From 2025 onwards a Coastal Change Management Area plan will be developed and implemented by the council to help facilitate community adaptation to increasing levels of risk posed by sea level rise.



Allow natural processes to continue but ensure health and safety compliance.

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**SMZ 5b: W23
Gurnard to Cowes Parade**



ODU W23 boundaries in SMZ5b

SMZ 5b Preferred Strategic Option: Maintain protection through a programme of maintenance and capital refurbishment works to the sea wall to prevent erosion and re-activation of relict landslips.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£3,641,000	£23,551,000	6.5 : 1

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

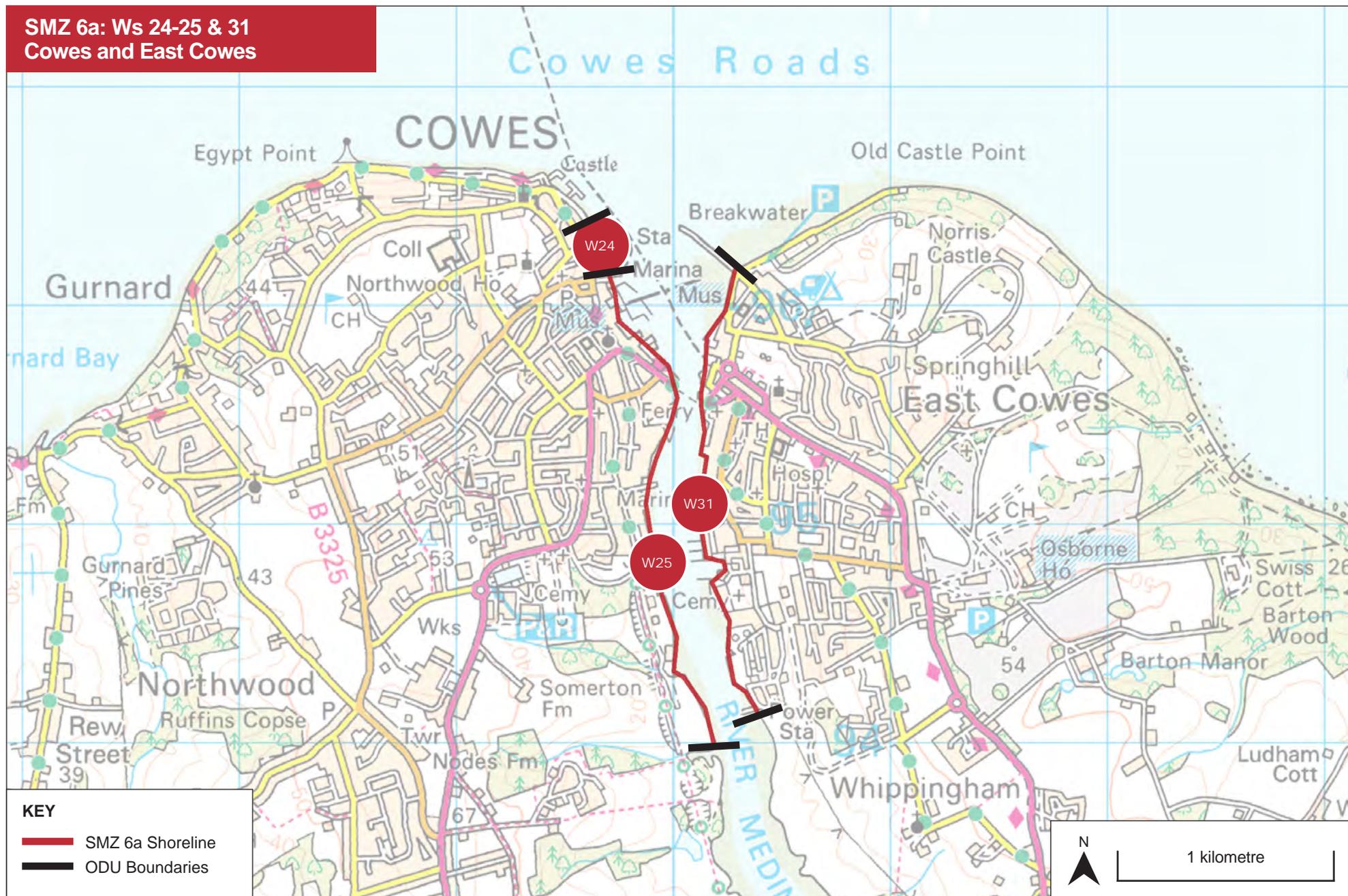
W23 | Gurnard to Cowes Parade

2015-2025	2025-2055	2055-2115	
			

Programme of maintenance and refurbishment works to the existing seawall to prevent failure and erosion but accept flood risk (from wave overtopping) will increase over time. Given the variable condition of the seawall it is likely that sections of the defence will require an initial capital refurbishment or replacement scheme in 15 years with a further period of intervention thereafter. There is likely to be partial GiA funding towards the cost of these works. Contributions will also be required to form part of the funding to implement the preferred option. At the western end of this frontage, privately funded maintenance of existing private defences will be permitted, subject to gaining the required consents.

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**SMZ 6a: Ws 24-25 & 31
Cowes and East Cowes**



ODU W24-25 and 31 boundaries in SMZ 6a

SMZ 6a Preferred Strategic Option: In the short and medium term maintain the existing defences and use Temporary Flood Barriers and Property Level Protection to sustain a 1 in 75 year SoP in the areas at significant risk. Use redevelopment opportunities to facilitate the raising / implementation of new strategic defences. In the long term (from 2055) implement new defences such as seawalls or setback floodwalls to manage the increase in flood and erosion risk posed by sea level rise.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£19,356,000	£57,776,000	3.0 : 1

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

W24 West Cowes (north)



Reduce tidal flood risk through a property level protection (PLP) and community flood warning scheme. Private ongoing maintenance and upgrading of coastal structures along the seafront is also required to prevent the risk of erosion and help to address the risk of flooding**. A high proportion of GiA funding is likely for PLP for residential properties at very significant risk. Redevelopment / change of use opportunities to raise land levels or provide defences to reduce longer term flood risk. Longer term funding for new defences will need to come mainly from non GiA sources.

** Subject to gaining the necessary consents

W25 West Cowes (centre and south)



Reduce tidal flood risk to the areas at highest risk in the short and medium term through property level protection and temporary barriers linked to a community flood warning scheme. A high proportion of GiA funding is likely for temporary barriers and PLP for residential properties at very significant risk. Private maintenance and upgrading of defences is also recommended**. Longer term funding for new defences will need to come mainly from non GiA sources. Redevelopment / change of use opportunities to raise land levels or provide defences to reduce longer term flood risk, and contribute to strategic defences.

W31 East Cowes



Reduce tidal flood risk to the areas at highest risk in the short and medium term through property level protection and temporary barriers linked to a community flood warning scheme. A high proportion of GiA funding is likely for temporary barriers and for PLP for residential properties at very significant risk. Private maintenance and upgrading of defences is also recommended**. In the longer term raise frontline defences and setback defences to address long term flooding and erosion risks. Longer term funding for new defences will need to come mainly from non GiA sources. Redevelopment / change of use opportunities to raise land levels or provide defences to reduce longer term flood risk, and contribute to strategic defences.

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SMZ 6b Preferred Strategic Option: Within the Medina, no planned maintenance or intervention (with the exception of West Medina Mills). Privately funded maintenance of existing assets and property level protection permitted (subject to gaining the necessary consents). At East Cowes outer esplanade, minor maintenance of the existing seawall, transferring to do nothing in the longer term.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£62,000	£0	N/A

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

W26-28 & W30 | Central Medina



No planned maintenance or intervention. Privately funded maintenance of existing assets permitted (subject to gaining the necessary consents).

An exception to this is W27 - West Medina Mills, where privately funded defence upgrades will also be permitted (subject to gaining the necessary consents)..

W32 | Shrape Breakwater to Old Castle Point



In the short term the preferred approach is to continue minor maintenance to extend the residual life of the seawall where achievable (especially at the western end of the unit). Larger maintenance needs however will be assessed on a case by case basis, to determine what is affordable. There are not sufficient residential properties in this area to justify continued defence and therefore when the current structures reach the end of their life, there are no proposals to replace them in the medium or long term. Only required health and safety measures will be undertaken, and erosion risk will increase as the coastline begins to evolve naturally.

*note that costs and benefits are presented in Present Value (PV) terms (unless otherwise stated). PV describes the whole life costs and benefits of an option, spread over the next 100 years and including a discount factor (providing the current worth of future sums of money). The undiscounted cash costs of the options will exceed the PV values presented.

**SMZ 6c: W29
Newport Harbour**



ODU W29 boundaries in SMZ6c

SMZ 6c Preferred Strategic Option: Maintain then refurbish existing defences once they reach the end of their service life. In the short term recommend Property Level Protection to manage and reduce flooding to areas at very significant risk. In the long term utilise redevelopment opportunities to facilitate the raising / implementation of new strategic defences to improve the standard of flood protection.

PV Cost*	PV Benefits*	Benefit:Cost ratio
£1,932,000	£3,292,000	1.7 : 1

KEY	 Do Nothing	 Property Level Protection	 Environmental mitigation/habitat creation	 Upgrade/Refurbishment	 Adaptation / Coastal Change Management Area
	 Temporary flood barriers	 Maintenance	 Capital Works	 Maintain access/Health & Safety	 Developers provide new defences

W29 Newport Harbour

2015-2025 	2025-2055 	2055-2115 	
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Maintenance of quay walls is required by the asset owners to prevent deterioration. Refurbish and upgrade existing structures at the end of their service life (subject to gaining the necessary consents), then maintain these assets.

Recommend reducing tidal flood risk to a small number of properties through privately funded property level protection.

Longer term funding for new defences will need to come mainly from non GiA sources. Redevelopment / change of use opportunities to raise land levels or provide defences to reduce longer term flood risk and contribute to a strategic defence.

*note that costs and benefits are presented in Present Value (PV) terms (unless otherwise stated). PV describes the whole life costs and benefits of an option, spread over the next 100 years and including a discount factor (providing the current worth of future sums of money). The undiscounted cash costs of the options will exceed the PV values presented.

'Priority' and 'Epoch 2' schemes

When developing the Strategy the key areas with the most significant flood and erosion risk and the greatest need for coastal defence schemes were identified (see map and table below). The areas with the greatest present day risk, where schemes are planned for the next 10 years are known as 'priority schemes'. Priority schemes include temporary flood barrier and property level protection measures in Cowes, East Cowes and Yarmouth. If funding can be obtained, it is anticipated that the priority schemes will be implemented during the next 10 years.

Areas with significant risk in the future where schemes are required from 2030 are known as 'epoch 2' schemes. Epoch 2 schemes include Gurnard to Cowes defence refurbishment and Bouldnor Road defence refurbishment.

To assess the economic feasibility of the schemes the likelihood of partnership funding for each scheme has been determined. The schemes with the greatest chance of funding are the priority schemes at Cowes, East Cowes and Yarmouth. The schemes at Bouldnor Road and Gurnard-Cowes have a reduced chance of funding, but remain aspirational if contributions / funding partners can be identified. Further work will be undertaken to try to facilitate these schemes.

Summary of priority schemes

Scheme	SMZ ODU	Capital cost (£)	Maintenance cost (£)	B:C	No. of residential properties benefitting	PF score	Funding shortfall (£)	Potential GiA amount (£) assuming contributions to achieve 100%
Cowes and East Cowes property level protection (ABC)	6a / W24, W25, W31	£267,200	£32,600	8.5	34	77%	£60,500	£206,700
Combined temporary barriers scheme: Cowes and East Cowes temporary barriers (ABCD) and Yarmouth temporary barriers	6a and 3a / W16, W25, W31	£773,800	£151,100	10.8	75	75%	£191,100	£582,700

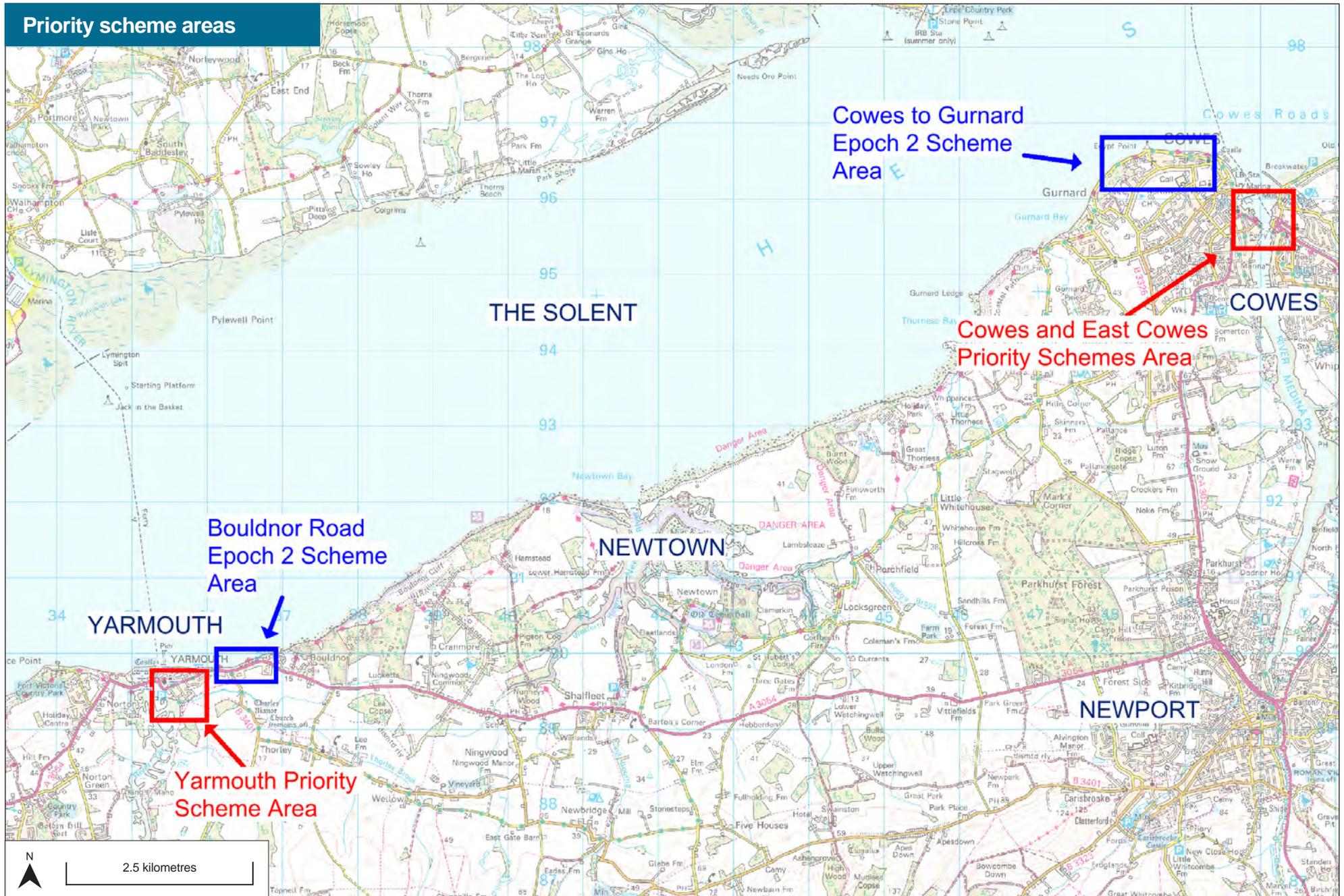
Summary of epoch 2 schemes

Gurnard to Cowes refurbishment	5b / W23	£2,800,000	£240,000	5.9	89	52%	£1,345,700	£1,454,300
Yarmouth-Bouldnor road refurbishment	3a / W17	£1,159,000	£78,000	13.5	8	75%	£291,000	£868,000

Assumptions – appraisal period is 20 years

Average indicative numbers over the whole life of the scheme

Priority scheme areas



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How will the Strategy be funded?

The Strategy recommends economically sound preferred strategic approaches to managing flood and erosion risk. It is estimated that the costs of implementing the Strategy will amount to approximately £37.2million over the next 100 years (in present value terms).

Until recently, gaining public funding for coastal defences was an all or nothing process. If a scheme was deemed worthy it would gain Environment Agency approval and would receive 100% public grant funding. Other schemes, which were still viable, but were less economically beneficial, would fail to gain approval and would receive no funding. With a finite pot of money available to pay for schemes, it meant that some key defences were not being constructed.

In recent years (and since the Isle of Wight Shoreline Management Plan was produced) there has been a change in the national approach to the way coastal defences get funding. The new system, referred to as a payment for outcomes approach, rewards the 'partnership funding' of schemes and provides many positive benefits with more schemes now being built as a result. The principles of the funding system are simple, encouraging local funding sources to supplement national grants, with those benefiting from schemes contributing to their cost. We are committed to working with others to explore alternative funding sources and capturing broader outcomes and objectives through our projects to assist communities at risk.

How could you contribute?

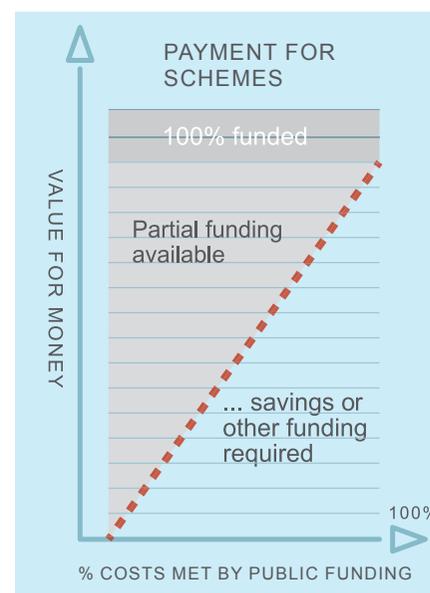
There are several different initial schemes required under the Strategy and these will need to be funded through a partnership approach, with contributions supplementing a proportion of Grant in Aid monies public funding to make up the funding shortfall and ensure the defences get built.

Having estimated the cost of undertaking each scheme within the Strategy, and identified the timing of when it is required, mechanisms to secure funding streams and contributions can be developed.

Such contributions can include:

- Directly through developers - e.g. land raising or a new frontline structure through redevelopment
- Potential beneficiaries of the schemes - private individuals or businesses
- Local levies
- Public funding - Council monies
- Contributions from developers, e.g. Section 106 monies and the Community Infrastructure Levy
- Local Enterprise Partnership
- Monies collected by local communities or Town and Parish Councils
- Other external sources.

Payment for schemes





Finalising the Strategy, and the way forward

The Strategy underwent a three-month period of public consultation in Spring 2016 (as outlined in Chapter 3) and is put forward for adoption by the Isle of Wight Council and approval by the Environment Agency. Following approval, the Strategy actions will be implemented with commencement of the priority schemes over the coming few years. Each of the priority schemes will be developed in full detail, in consultation with the communities affected. The Isle of Wight Council and Environment Agency will continue efforts to secure funds for the priority schemes.

Find out more

We would like to take this opportunity to thank the communities and organisations involved in the development of the Strategy. The Strategy will guide coastal practitioners on the best approach to future management of this coastline.

Next steps



