

Welcome to this information sharing event

Thank you for coming today, we appreciate your time and hope that this session will provide you with an understanding of the work Lewes District Council (LDC) has undertaken in the development of the Plan. This session will focus on a 100 Year Plan that has been developed for the area between East Saltdean and Newhaven Western Harbour Arm to develop options to manage the frontage sustainably. LDC only have permissive powers to undertake coastal management, they are not legally obliged to protect the coast.

Today we would like to:

- Present the work that has been undertaken in **developing the Plan**
- Discuss the **results of the Plan** and the different options assessed to manage the risks from coastal erosion over the next 100 years. It should be noted that there is not an imminent erosion risk to the majority of the frontage.
- Explain the **Government's framework** for coastal management and the rules which have to be followed
- **Listen to your views** on the options to manage the erosion risk.



Ways of Working

LDC are undertaking this session to provide an open and transparent approach to working together with the wider community

We will:

- Provide you with accurate and concise information about the Plan
- Be open and unbiased
- Listen to and accurately record discussions.

You can help us by:

- Asking questions to help you fully understand the Plan to sustainably manage erosion risk over the next 100 years.

Previous Studies

A series of studies have been undertaken and have been reviewed and built upon as part of the Plan:

- Beachy Head to Selsey Bill Shoreline Management Plan
- The Saltdean to Western Breakwater Strategy Plan
- Maintenance of Groynes 1-17 at Peacehaven.

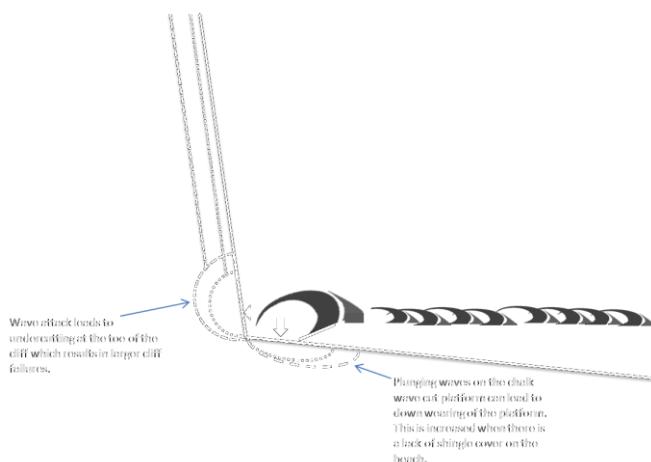
Background – Current Coastal Management

The existing coastal defences along the frontage consist of:

- concrete seawalls
- concrete groynes
- rock revetments – a sloping surface of rock used to protect an embankment, natural coast or shoreline against erosion
- limited natural shingle beaches

The defences protect the toe of the cliff from coastal erosion and undercutting, helping to reduce the rate of cliff retreat along the defended sections of frontage.

Diagram illustrating how the waves can cause undercutting and down wearing of the unprotected cliffs

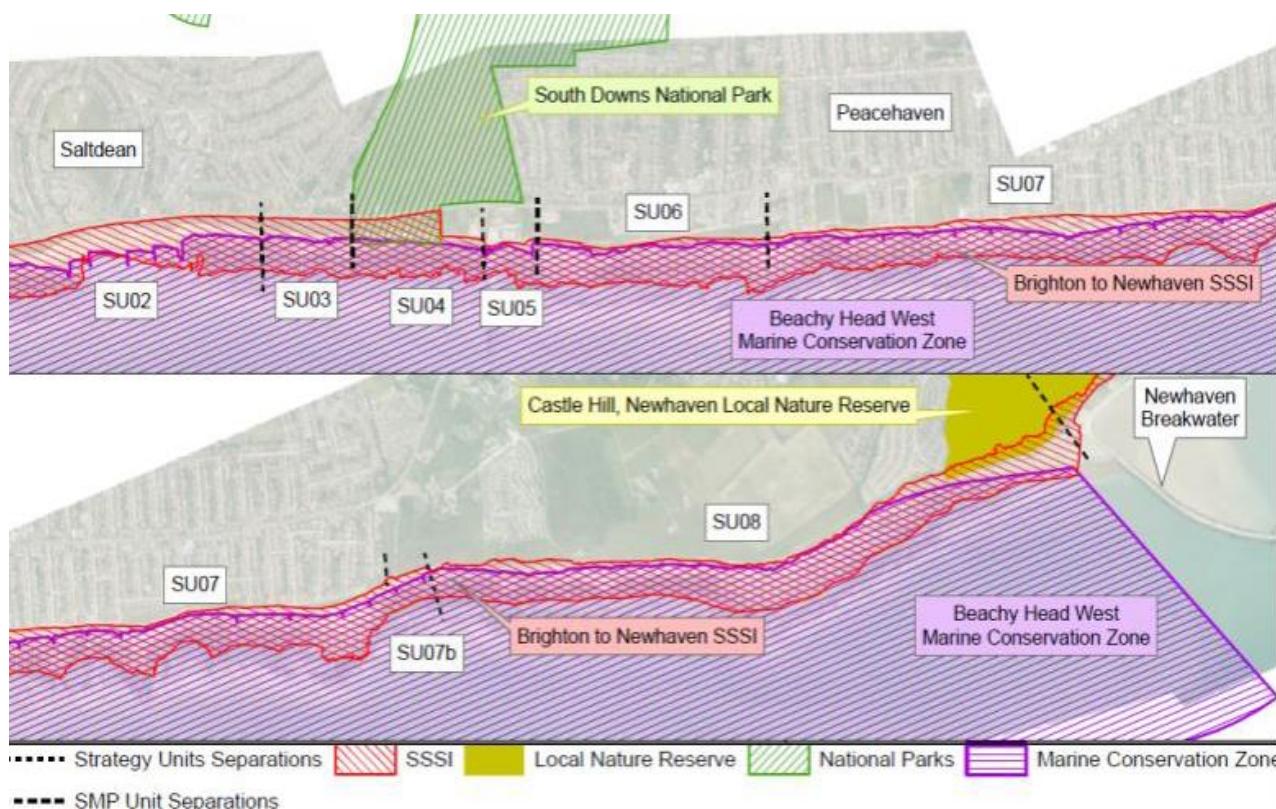


Environmental Designations

There are a number of environmental designations in the area that need to be taken into account when developing the Plan:

- Beachy Head West Marine Conservation Zone
- Brighton to Newhaven SSSI
- South Downs National Park
- Castle Hill Local Nature Reserve

These designations have been considered when developing the Strategy to ensure that there are no adverse impacts on the designations which are important for the geology as well as terrestrial and marine biodiversity. These will need to be assessed in more detail at the project level.



Map showing the environmental designations along the frontage. It can be seen that the Marine Conservation Zone and SSSI extend across the whole Plan area. The South Downs National Park meets the coastline between the Marina and Rottingdean and at Telscombe. The Local Nature Reserves are just set back from the coast at Beacon Hill, immediately to the west of Rottingdean; and at Castle Hill on the eastern most extent of the Newhaven Cliffs.

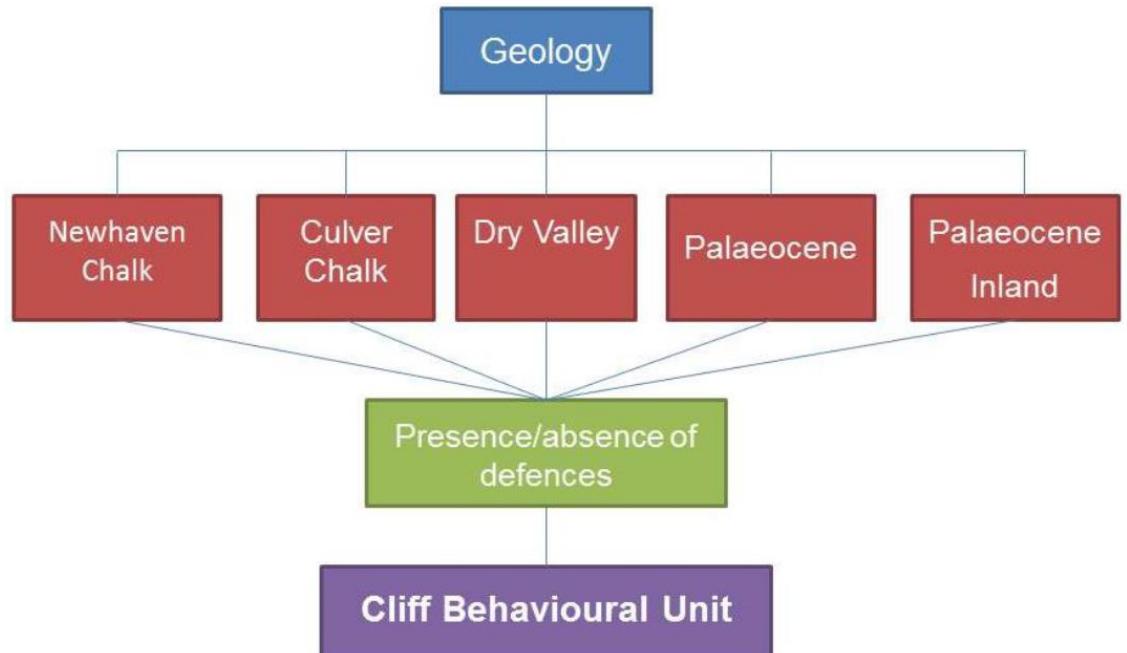
Background – Coastal Erosion

Along the currently undefended sections of the frontage the cliffs are currently experiencing an average rate of coastal erosion between **0.28m - 0.48m** per year depending on the geology of the cliffs which changes along the frontage.

Cliff Retreat Projections

Cliff retreat due to coastal erosion is projected over the next 100 years based on:

- Categorising the frontage into Cliff Behaviour Units (CBUs)
- Calculating historic retreat rates for each CBU
- Calculating future projections of cliff retreat taking account of Sea Level Rise
- Modelling the future retreat rates.



Method

- Values of projected future retreat were calculated from a combination of:
 - geology;
 - annual averages of historic retreat rates calculated from maps (dating back to the 1800s);
 - aerial photography and laser scan cliff surveys to determine the extent and locations of past failures;
 - future sea level rise taken from the UKCP09 website; and
 - residual life of the current defences determined during a site walkover in December 2015.
- This data was used to extrapolate historic rates of retreat in line with sea level rise and determine which assets were at risk over the 100 year period
- Even though the options protect the toe of the cliff from erosion, there is still likely to be retreat of the top of the cliff due to weathering and the natural behaviour of the cliff. As a result the installation of coastal defence options will not completely eliminate the threat of erosion to cliff top assets, but it will significantly reduce it
- The cliffs will continue to be monitored to refine the rates of retreat overtime.

N.B. This plan has focused on the rates of retreat associated with coastal erosion, however it is recognised that there is also weathering of the cliff top which will also result in the retreat of the cliff top.

Government's Funding Regulations

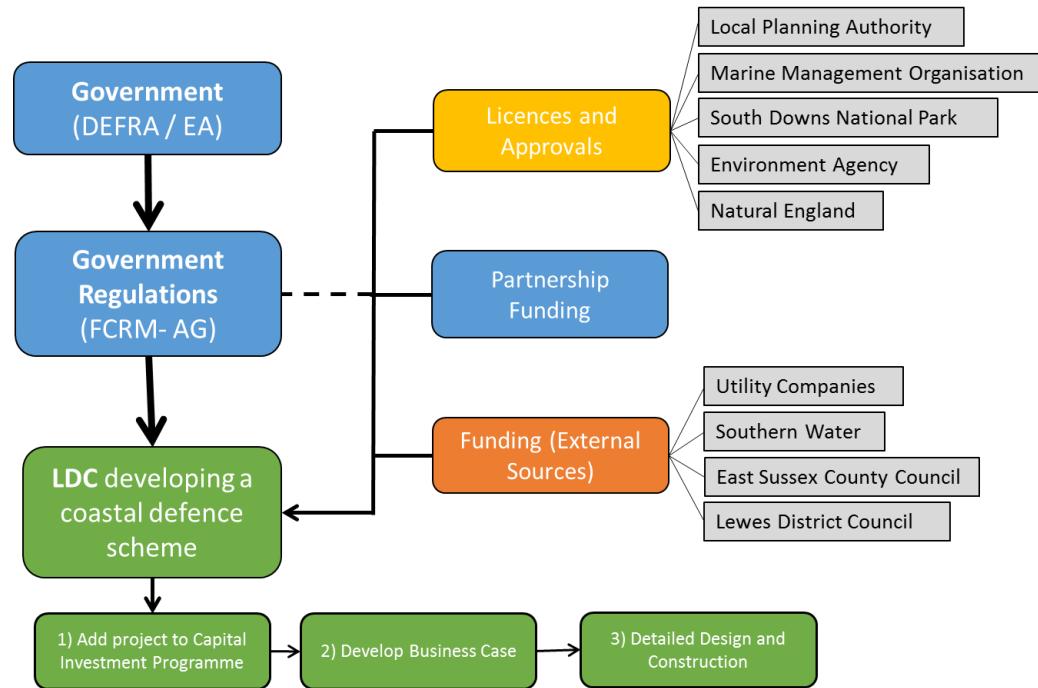
The development of the coastal management implementation plan (CMIP) aims to take account of the **changes in coastal management guidance**, which was updated by Central Government and the Treasury in 2010.

How does a scheme get approved?

To get a scheme approved takes a long time, with several organisations needing to agree to the proposed scheme.

It is also key that LDC follow the Government's guidance, which ensures that schemes developed:

- reduce the threat to people and their property
- deliver the greatest environmental, social and economic benefit
- work with natural processes
- adapt to future risk and changes (e.g. climate change)
- deliver wider objectives.



Funding Coastal Defence Schemes

LDC need to apply for Grant in Aid from DEFRA (GiA) to undertake the construction or capital maintenance of new defences. The amount of funding available is calculated through a Partnership Funding approach.

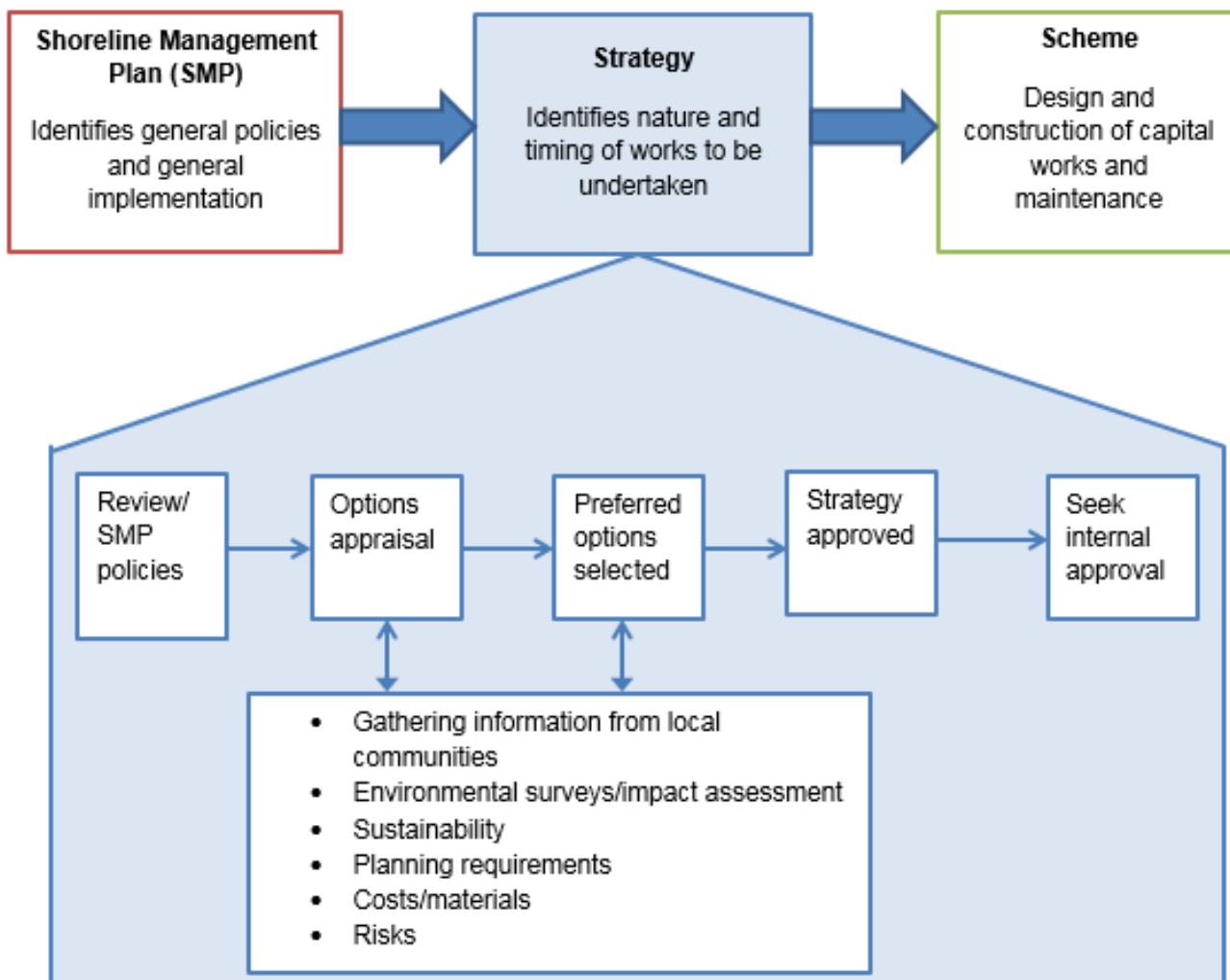


Diagram explaining how the Plan fits into the tiered approach to manage erosion risk, and the work that goes in to develop the strategy

Economics and Partnership Funding

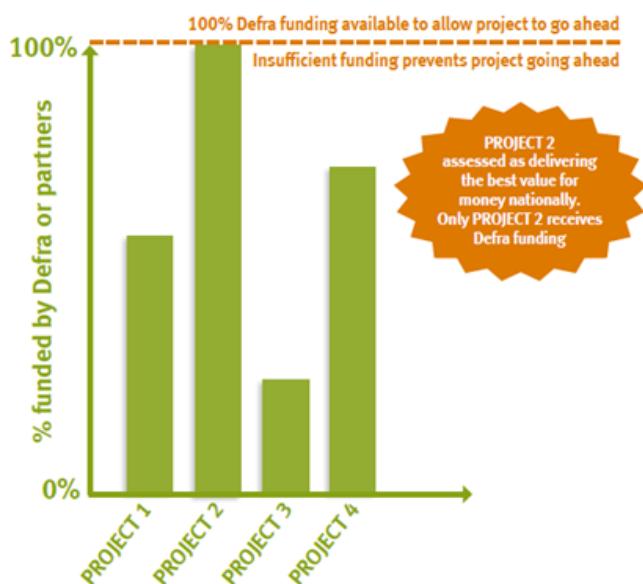
- For a scheme to be eligible for Government funding it has to have a Benefit Cost Ratio greater than 1
- Schemes with higher Benefit Cost Ratios are more likely to achieve Government funding than those with lower ratios
- Costs are presented in Present Value, which reflects the total value of all future costs and benefits in today's prices.

$$\text{Benefit Cost Ratio (BCR)} = \frac{\text{Benefits}}{\text{Costs}}$$

Benefits
 Value of property and infrastructure protected against erosion

Costs
 The whole life costs of the scheme to protect against erosion

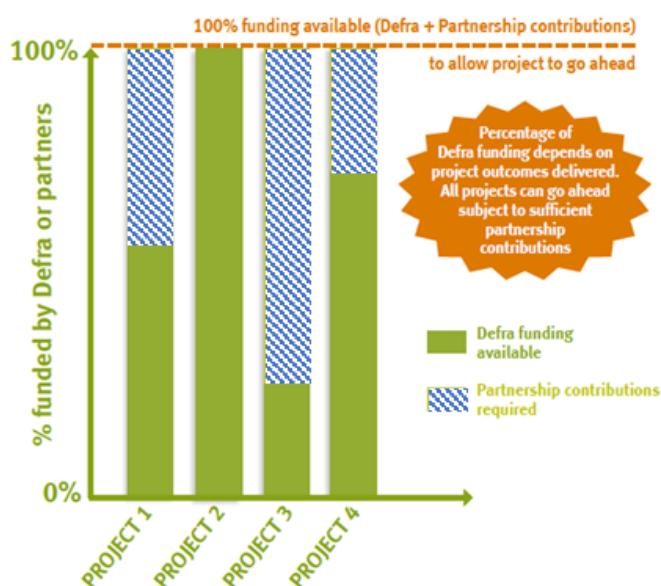
Pre-2011 Defra 'all or nothing' funding system



Partnership Funding

- In 2011, Defra updated the rules for funding flood risk management projects
- The Partnership Funding guidance sets out criteria which assigns a funding percentage score to each project
- The higher score of the project, the more likely it is to receive a greater proportion of Government funding. The rest of the funding will need to be covered by third party funders e.g. ESCC, and Southern Water
- Funding is allocated nationally on an annual basis and the score of a project is considered against other projects around the country, both coastal and inland flood risk (approx. 200-300 projects per year)
- This process ensures that tax payers' money is spent where it can deliver most benefit for least cost
- Schemes that do not qualify for 100% national funding can seek contributions from anywhere.

Current Defra 'partnership funding' system



Management Options – Rottingdean to Saltdean

(LDC only manage the promenade at East Saltdean highlighted in blue on the map below)



Key risks if the defences were to fail

- Risk of loss of the main road (A259)
- Potential risk to properties
- Potential risk to the Southern Water Trunk Sewer and other utility services.

Current Management

- Promenade in a fair condition at East Saltdean (approx. 20 years life remaining if maintained).

Options	Do Minimum/ Maintenance	Rock Revetment in Front of Seawall	Replace Seawall	Coastal Adaptation
Description	High level maintenance of the seawall, rock revetment and eastern end rock groyne/beach. Phased concrete cladding of the seawall in Year 10, 15 and 30 to extend the life of the seawall. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	High level maintenance of the seawall, rock revetment and eastern end rock groyne/beach. Phased concrete cladding of the seawall and placement of rock revetment in Year 10 and 28. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Medium level maintenance of the seawall, rock revetment and eastern end rock groyne/beach. Phased implementation of the new seawall in Year 18, 28, and 43 based on the residual life of the defences. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	High level maintenance of the seawall, rock revetment and rock groyne/beach until Year 40. Localised re-route of the A259 inland and setback of houses from Year 40. Further detailed study is required to consider the wider environmental and social impacts. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.
Cost (NPV - includes 60% risk allowance)	£7.4 million	£11.9 million	£18.2 million	£19 million (costs for the road diversion could vary significantly depending on the level of consultation required. Further more detailed study will be required if this option is taken forward.)
Benefit Cost Ratio	21.0	13.1	8.5	8.2
Partnership Funding Score	124%	77%	50%	48%
Potential for government funding availability	The Benefit Cost Ratio is high enough that based on the calculations the capital works of the scheme may be fully funded.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £2.5 million in external funding contributions for the option to be fully funded.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £6.1 million in external funding contributions for the option to be fully funded.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £6.2 million in external funding contributions for the option to be fully funded.

* Options will require further assessment and development, as well as approval from the relevant statutory authorities e.g. Natural England. The options presented are only feasibility options to help the Council with future planning, and may be subject to change when assessed in more detail.

Management Options – East Saltdean (Undefended)

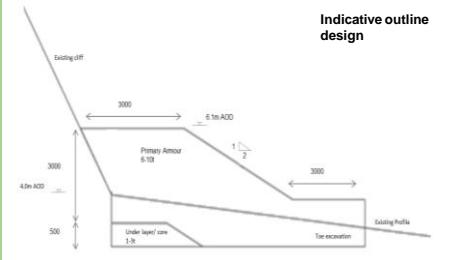


Key risks if the defences were to fail

- Risk of loss of the main road (A259)
- Potential risk to properties
- Potential risk to the Southern Water Trunk Sewer and other utility services.

Current Management

- Currently undefended.

Options	Rock Revetment in front of cliff	Localised re-route of the A259	Construction of new promenade and cycleway
Description	<p>Construction of rock revetment at toe of cliff in Year 30. Medium level of maintenance works every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.</p> 	<p>Continue to leave undefended and then localised re-route of the road inland in Year 50 and setback of houses from Year 70. Further detailed study is required to consider the wider environmental and social impacts. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.</p>	<p>Construction of a new promenade in Year 5 with a cycleway to join up to the promenade at East Saltdean. Medium level of maintenance works every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.</p>
Cost (NPV - includes 60% risk allowance)	£795,000 (present day capital cost £2.3 million)	£2 million (present day capital cost £11.7 million)	£7 million (present day capital cost £11.4 million)
Benefit Cost Ratio	39.3	15.4	4.5
Partnership Funding Score	218%	85%	28%
Potential for government funding availability	The Benefit Cost Ratio is high enough that based on the calculations the capital works of the scheme may be fully funded.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £292,000 in external funding contributions for the option to be fully funded.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £4,306,980 in external funding contributions for the option to be fully funded.

Management Options – Telscombe Cliffs



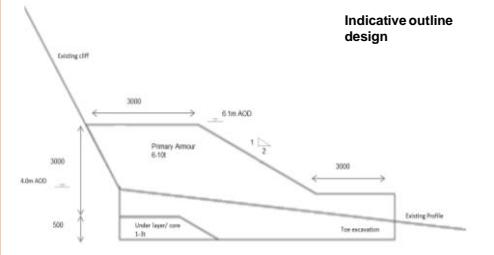
Key risks from erosion (currently undefended)

- Risk of loss of the main road (A259) over the 100 year period
- Potential risk to properties over the 100 year period
- Potential risk to the Southern Water Trunk Sewer and other utility services over the 100 year period.

Current Management

- Undefended Section
- Potential risk to property near edge of cliff.



Options	Rock Revetment in front of cliff	Localised re-route of the A259	Construction of new promenade and cycleway
Description	<p>Construction of rock revetment at toe of cliff in Year 50. Medium level of maintenance works every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.</p> 	<p>Continue to leave undefended and then localised re-route of the road inland and setback of houses in Year 60. Further detailed study is required to consider the wider environmental and social impacts. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.</p>	<p>Construction of a new promenade in Year 5 with a cycleway to join up to the promenade at East Saltdean. Medium level of maintenance works every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.</p>
Cost (NPV - includes 60% risk allowance)	£593,000 (present day capital cost £2.4 million)	£568,000 (present day capital cost £3.7 million)	£9.4million (present day capital cost £15.3 million)
Benefit Cost Ratio	37.6	39.3	2.4
Partnership Funding Score	209%	218%	13%
Potential for government funding availability	The Benefit Cost Ratio is high enough that based on the calculations the capital works of the scheme may be fully funded.	The Benefit Cost Ratio is high enough that based on the calculations the capital works of the scheme may be fully funded.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £6,985,000 in external funding contributions for the option to be fully funded.

* Options will require further assessment and development, as well as approval from the relevant statutory authorities e.g. Natural England. The options presented are only feasibility options to help the Council with future planning, and may be subject to change when assessed in more detail.

Management Options – Telscombe



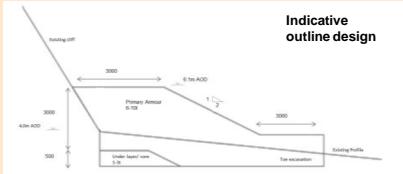
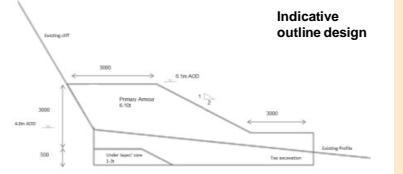
Key risks from erosion (currently undefended)

- Potential risk to properties over the next 100 years (no immediate threat to loss of property).



Current Management

- Undefended Section

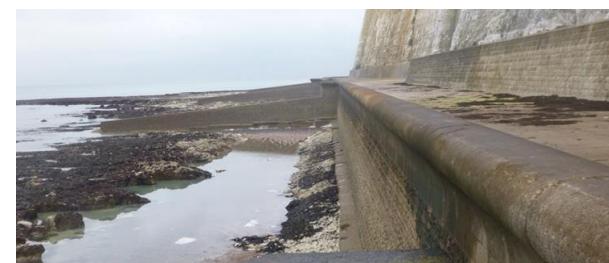
Options	Rock Revetment in front of cliff along whole section	Rock Revetment in front of cliff along the eastern end of the section	Coastal Adaptation	Construction of new promenade and cycleway
Description	Construction of rock revetment at toe of cliff in Year 3 . Medium level of maintenance works every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Construction of rock revetment at toe of cliff in Year 3 . Medium level of maintenance works every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Remain undefended and then set back of houses inland from Year 20 . Further detailed study is required to consider the wider environmental and social impacts. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Construction of a new promenade in Year 5 with a cycleway to join up to the promenade at East Saltdean. Medium level of maintenance works every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.
				
Cost (NPV - includes 60% risk allowance)	£4.6 million (present day capital cost £5.3 million)	£3.4 million (present day capital cost £3.9 million)	£14 million (present day capital cost £35 million)	£4 million (present day capital cost £12.4 million)
Benefit Cost Ratio	0.6	0.8	0.2	0.6
Partnership Funding Score	Not eligible as the BCR is less than 1	Not eligible as the BCR is less than 1	Not eligible as the BCR is less than 1	Not eligible as the BCR is less than 1
Potential for government funding availability	Not economically justifiable because the benefit cost ratio is less than 1, so the costs of the scheme are greater than the value of the assets being protected. Would require 100% external funding contributions which could be raised through Parish Precepts, district council etc.			

Management Options – Peacehaven



Key risks if the defences were to fail

- Potential risk to properties over the next 100 years.



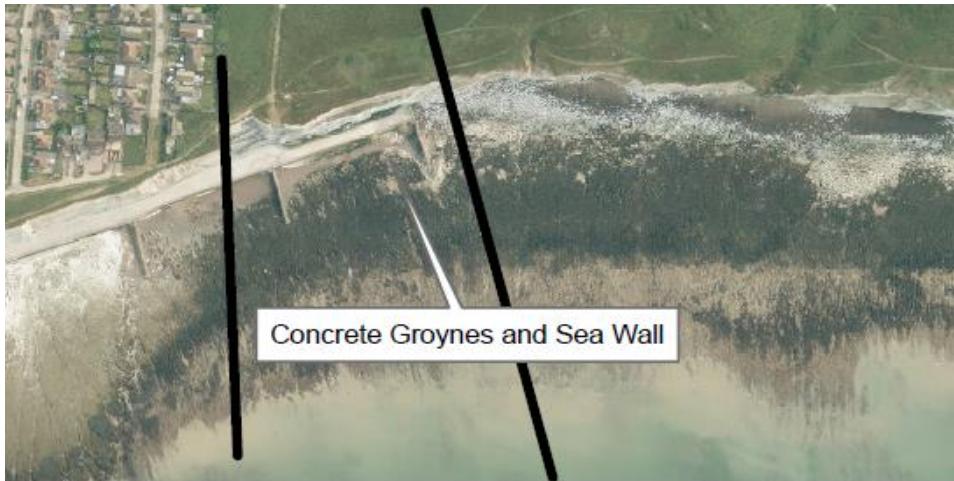
Current Management

- Seawall and promenade
- Concrete Groynes
- Defences in fair condition – approximately 20 years life remaining if maintained.

Options	Do Minimum/ Maintenance	Rock Revetment in Front of Seawall	Rock Revetment in Front of Seawall (without cladding)	Replace Seawall	Rock Groynes and Beach Recharge	Coastal Adaptation
Description	High level maintenance of the seawall and groynes. Concrete cladding of the seawall in Year 20 to extend the life of the seawall. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	High level maintenance of the seawall and groynes. Concrete cladding of the seawall and placement of rock revetment in Year 20 . Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	High level maintenance of the seawall, and groynes. Construction of rock revetment in Year 20 . Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Construction of new seawall in Year 20 . High level maintenance of the seawall every 10 years after construction. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	High level maintenance of the seawall and groynes. Construction of rock groynes and beach recharge from Year 18 . Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	High level maintenance of the seawall and groynes. until Year 50 . Set back of houses inland from Year 0. Further detailed study is required to consider the wider environmental and social impacts. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.
Cost (NPV - includes 60% risk allowance)	£9 million (present day capital cost £14 million)	£15.9 million (present day capital cost £25 million)	£9.3 million (present day capital cost £15 million)	£24.2 million (present day capital cost £39 million)	£26 million (present day capital cost £42 million)	£18.5 million (present day capital cost £30 million)
Benefit Cost Ratio	1.5	0.9	1.5	0.6	0.5	1.1
Partnership Funding Score	13%	Not eligible as the BCR is less than 1	13%	Not eligible as the BCR is less than 1	Not eligible as the BCR is less than 1	8%
Potential for government funding availability	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £4.7 million in external funding contributions for the option to be fully funded.	Not economically justifiable because the benefit cost ratio is less than 1, so the costs of the scheme are greater than the value of the assets being protected. Would require 100% external funding contributions.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £6.3 million in external funding contributions for the option to be fully funded.	Not economically justifiable because the benefit cost ratio is less than 1, so the costs of the scheme are greater than the value of the assets being protected. Would require 100% external funding contributions.	Not economically justifiable because the benefit cost ratio is less than 1, so the costs of the scheme are greater than the value of the assets being protected. Would require 100% external funding contributions.	Economically justifiable, the benefits from protection outweigh the costs of the scheme. However, the scheme would need a further £5.8 million in external funding contributions for the option to be fully funded.

* Options will require further assessment and development, as well as approval from the relevant statutory authorities e.g. Natural England. The options presented are only feasibility options to help the Council with future planning, and may be subject to change when assessed in more detail.

Management Options – Peacehaven (Groynes 18 & 19)



Key risks if the defences were to fail

- Potential risk to properties over the next 100 years

Current Management

- Seawall and promenade
- Concrete Groynes
- 5 year residual life of defences under a based on no maintenance of the defences
- A scheme may be justified by assessing the negative impact upon the rest of the Peacehaven defences if this end section is allowed to fail.



Options	Rock Revetment in Front of Seawall (whole section)	Replace Groyne 18 with Rock Groyne and Seawall Works (shorten prom – involves decommissioning of sea defences in this area)	Rock Revetment in Front of Seawall (short length)	Removal of Concrete Groynes and Construction of 2 Rock Groynes and Beach Recharge
Description	Removal of concrete groyne and construction of rock revetment in front of seawall in Year 3 . Medium level of maintenance every 10 years. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Replacement of groyne 18 with rock groyne, removal of groyne 19 and shorten promenade in Year 3 . Protect the wall with a rock revetment. Medium level of maintenance every 10 years. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Removal of concrete groyne, shorten promenade and construction of rock revetment in front of seawall in Year 3 . Medium level of maintenance every 10 years. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.	Removal of concrete groynes, construction of 2 rock groyne in Year 3 . Medium level of maintenance every 10 years. Ongoing monitoring and maintenance will be required to ensure that cliffs are retreating as expected.
Cost (NPV - includes 60% risk allowance)	£1.2 million (present day capital cost £2.2 million)	£1.5 million (present day capital cost £2 million)	£976,000 (present day capital cost £1.3 million)	£3 million (present day capital cost £4.8 million)
Benefit Cost Ratio	0.3	0.3	0.4	0.1
Partnership Funding Score	Not eligible as the BCR is less than 1	Not eligible as the BCR is less than 1	Not eligible as the BCR is less than 1	Not eligible as the BCR is less than 1
Potential for government funding availability	Although the Benefit Cost Ratio is less than 1, the scheme is potentially justifiable to ensure a sustained level of protection along the whole Peacehaven frontage.	Although the Benefit Cost Ratio is less than 1, the scheme is potentially justifiable to ensure a sustained level of protection along the whole Peacehaven frontage.	Although the Benefit Cost Ratio is less than 1, the scheme is potentially justifiable to ensure a sustained level of protection along the whole Peacehaven frontage.	Although the Benefit Cost Ratio is less than 1, the scheme is potentially justifiable to ensure a sustained level of protection along the whole Peacehaven frontage.

* Options will require further assessment and development, as well as approval from the relevant statutory authorities e.g. Natural England. The options presented are only feasibility options to help the Council with future planning, and may be subject to change when assessed in more detail.

Management Options – Peacehaven to Newhaven



- This site is currently undefended
- Towards the eastern end of the unit there is a shingle beach that is forming against the harbour arm, and is providing protection to the toe of the cliffs
- In this area the cliffs will retreat due to instabilities within the clay materials on top of the chalk cliffs associated with wind, rain and surface water; rather than the collapse of the chalk cliffs. As such this frontage will not be eligible for Government Funding as the risk is not from coastal erosion.

Key risks from collapse of the cliffs

- Potential risk to agricultural land
- Potential risk to Newhaven Heights mobile home park near the cliff top



Options	
Description	<ul style="list-style-type: none"> • No viable options developed as economic benefits are very low (limited benefits from mobile home park), so no schemes would be justifiable for government funding.
Cost (NPV - includes 60% risk allowance)	<ul style="list-style-type: none"> • The area has a Managed Realignment policy over the next 100 years, and therefore the Shoreline Management Plan (SMP) does not recommend any works. Managed Realignment allows the coastline to react naturally, and move the coastline further inland. In this area this is likely to be achieved by allowing the cliffs to naturally reach their own equilibrium.
Benefit Cost Ratio	<ul style="list-style-type: none"> • It is recommended that a more detailed geomorphological study of this area is undertaken to determine a more thorough understanding of the complex retreat of the cliff in this section.
Potential for government funding availability	<ul style="list-style-type: none"> • Further discussions regarding the management of the frontage should be had with the owners of Newhaven Heights, Newhaven Port and Properties, Newhaven Town Council, Lewes District Council and East Sussex County Council.

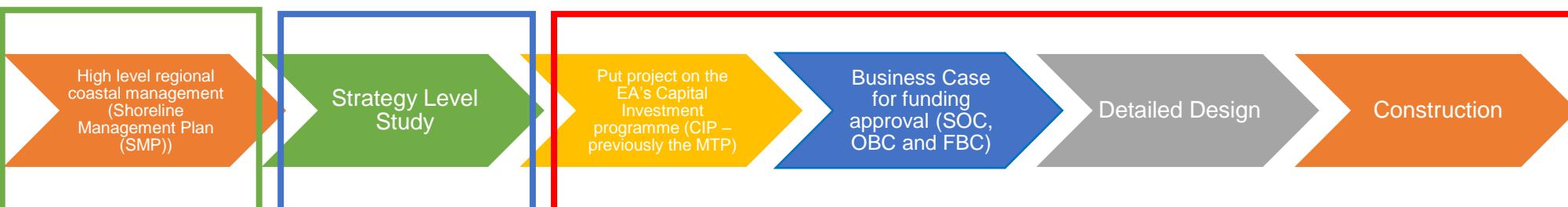
Next Steps

It is intended that this long term (100 year) Plan will act as a route map in outlining what future works need to be undertaken and when, to help inform LDC and its partners (Natural England, ESCC, EA, Parish and Town Councils) with their future Plans. However it is a long process and there are strict Government rules and guidance that need to be followed.

Completed

Current Stage

Future Stages



Stage	Description
Capital Investment Programme	LDC will need to add the selected projects to the Capital Investment Programme (CIP) (reviewed annually). This will inform the Environment Agency that there is likely to be a bid for Grant in Aid for a scheme in the future.
Business Case Development	Once a scheme has been identified and is on the Capital Investment Programme (CIP), then an Outline Business Case (OBC) is developed. During the OBC the options will be developed further and a more detailed economic assessment and outline design is undertaken. The output of the OBC is the presentation of the business case to the Environment Agency for assurance for Government funding.
Detailed Design	If the project gains assurance for Government funding, the next phase is to undertake detailed design. During this stage of the project the designs for the options will be refined further and greater detail added. The outputs will be used to procure the contractor for the works and used in the construction of the scheme. At this stage the Full Business Case (FBC) will be developed and a number of licences and permits will also be applied for.
Procurement of Contractor	Following the completion of the detailed design a contractor will be procured to undertake the construction works.
Construction	Once the project has been approved for Government funding, licences and permits have been obtained and the design has been completed, construction can commence, subject to any restrictions in the licences and permits.

In addition to seeking to undertake maintenance and capital works LDC will also undertake regular monitoring to calibrate the erosion rates against the predicted rates of retreat. Additionally LDC are working with the other parties to develop a collaborative approach to the future management of the cliffs.

Any comments?

The Project Team would like to know your views about the Plan, including:

- Your observations about frontage or particular issues to you
- Your hopes for the future of the frontage
- Your opinions and preferences about the options
- Suggestions for how any funding shortfall could be met
- Any comments you have on the information presented and whether you would you like to be kept informed.



Please complete a feedback form and chat to the Project Team to give your views.

Thank you