Beachy Head to Selsey Bill Shoreline Management Plan

Appendix F: Initial Policy Appraisal & Scenario Definition

Contents by Policy Unit

Note the geographic breakdown of the appraisals presented in this Appendix is not necessarily the same as the final Policy Units (PU). Here the breakdown has been based upon coastal process and morphological changes along the shoreline. For ease of reference, the following table identifies the page number on which appraisals relevant to each PU start.

Policy Appraisal, Scenario Definition and Policy Scenario Testing

Introduction

In order to define appropriate policy for the SMP coastline, the four different policy options: Hold the Line, Advance the Line, Managed Realignment and No Active Intervention, have been tested at each location and their resulting coastal process interactions assessed. Where more than one policy offers benefits to a particular feature (coastal location), each policy, and combinations thereof, has been assessed over the various epochs.

As described in the Procedural Guidance, a filtering process was adopted to identify key drivers that would establish a dominant policy for a particular feature. As a result of the first filtering process (Filter 1), two locations were identified where there is a dominant policy:

- Selsey Bill – Hold the Line: the key drivers at Selsey are: Socio – Economic, Environmental and Technical (geomorphological).
- Beachy Head – No Active Intervention: the key drivers at Beachy Head are Environment and Technical (hard geological point).

Elsewhere, all four policy options have been considered at each location (Filter 2), however, each one has only been developed and tested where there are opportunities/benefits to be derived from that policy. These are referred to within the table as **Filter 2 Policy A,** or **Filter 2 Policy B** and so on. A Hold the Line policy has generally been adopted along urbanised areas, but where there is open space, the opportunities for Managed Realignment or No Active Intervention have been considered. If there are no benefits or opportunities for any of the objectives defined for the frontage, then the policy has been discounted.

In order to clarify the Hold the Line policy, the way in which this policy could be achieved and how it could be implemented along the coastline is identified. For example:

- Hold the Line: some defences may be maintained and upgraded/replaced in their current position.
- Hold the Line: (renewed defences): refers to the construction of new defences along a retired line, positioned landwards of the existing shoreline. The aim of this is to retain the existing character and form of the coast with minimal disruption while maintaining all existing assets. An example of how this could be implemented is by placing the new defences immediately behind those existing and planning for any losses that may be incurred.

In some cases of Managed Realignment and No Active Intervention, there is the potential to release sediment into the system. This may be considered a benefit to the shoreline, however, the policy option is not considered because there would be significant environmental, technical or socio-economic losses at the location that would also arise from these options. The duration of sediment release and the effect of coastal processes on the movement of that sediment have not been assessed.

A rate of shoreline change has been estimated for the policies, Managed Realignment and No Active Intervention. These rates have been taken from the “No Active Intervention” and “With Present Management” baseline assessments and applied according to the policy under assessment. These rates of loss can be used with Modelling and Decision Support Framework (MDSF), which calculates the annual average damages for the preferred policy, leading to an assessment of economic viability: viable, marginal or not viable. The rates have

also been used to produce a series of maps (see Annex F1) that show how the coastline may look in the future depending on policy scenario(s) being tested. Sensitivity testing of the preferred SMP policy adds robustness to the decision making process. The average annual damages are provided in Appendix H, as cumulative figures and across epochs.

The following tables identify all the policies tested at each location followed by those objectives that have been met. The preferred policies and objectives met are summarised in Appendix G.

It should be noted that the coastal processes analysis carried out for this policy testing and scenario development table has been completed in the direction of longshore drift, or clockwise around the coast, i.e. Selsey Bill to Beachy Head. The SMP however, runs from Beachy Head to Selsey Bill, anticlockwise around the coast.

Scenario Assessment Table

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Selsey Bill to East Beach			
Filter 1	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The concrete seawalls, fronted by groynes would remain.	The concrete seawalls, fronted by groynes would remain, but their integrity would be threatened.	The existing concrete seawalls and timber groynes would fail during this period and the new seawall and groynes would form the new, renewed defence line.
	The seawalls, which would require maintenance throughout this period, would fix the landward limit of the beach along most of this frontage, while the seaward section of the beach would start to erode landwards in response to sea level rise. As a result, the beach would be 'squeezed' between the fixed landward limit and the retreating seaward boundary; sediment would no longer be supplied from the land. The beach would therefore begin to narrow and steepen and beach levels would begin to lower. At the north-eastern most end of the frontage, where the sections of seawall are not continuous, the beach would narrow and steepen and the shoreline between sections of the seawall would begin to retreat	Along most of this frontage, the beach would continue to narrow, steepen and lower as sea level rise continues at it becomes 'squeezed' against the defences behind. It would be expected that by the end of this period, the beach would be lost and the shoreline would lie at the foot of the seawalls. The groynes would therefore become redundant and fail at the end of this period. Upgrading and an increased commitment to maintenance of the seawalls would be required in order to maintain their integrity, as they would be exposed to more wave attack (due to the loss of the beach and sea level rise). Cut-back and some outflanking (back-door	There would be continued damage to the seawall, increased overtopping and breaching of the existing seawall. It would no longer be technically feasible to maintain or sustain the seawall and groynes in their present position. Instead, it would be necessary to build a new seawall landward of that existing and re-build the groynes to a position further inland. The clay headland of Selsey Bill would realign to a renewed position from its present position. The landward limit of the beach would be fixed by the new seawalls, while the seaward section of the beach would continue to erode landwards in response to sea level rise. As a result, the beach would be 'squeezed' between the fixed landward

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Selsey Bill to East Beach			
	landward. The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved eastwards by longshore transport or remain temporarily on local beaches.	flooding) would occur to the north of the seawall as the shingle beach along this frontage rolls back. The beach loss and shoreline retreat would continue to release limited sediment into the coastal system. The seawalls would prevent release of material from the land behind the structures, resulting in a greatly reduced potential sediment supply to the east.	limit and the retreating seaward boundary. Any material released via this erosion would be trapped by the new groynes along this length of coastline. Sediment transport from Selsey Bill to the east would be reduced and minimal. Cut-back and outflanking to the north of East Beach, at Church Norton, would be reduced by the presence of the secondary flood defences constructed at Church Norton during Years 20-50.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
East Beach to Church Norton			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The timber groynes and sheet piling would remain.	The groynes would become redundant and the integrity of the sheet piling would be threatened unless the defences are maintained and upgraded. Beach renourishment would be required.	The existing concrete seawalls and timber groynes would fail during this period and the sheet piling and groynes would form the new, renewed defence line. Beach renourishment would have to be of sufficient volume to offset sea level rise.
	It is expected that during the beginning of this period, there would be little change to the existing situation due to the residual life of the defences. The groynes would continue to trap material transported from the south-west. There would be no change to the sediment supplied from updrift. The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved eastwards by longshore transport or remain temporarily on local beaches.	The sheet piling would continue to fix the landward limit of the beach, but would require an increasing commitment to maintenance and upgrading. The groynes would continue to trap material, although a reduction in material transported from the south-west would result in continued beach narrowing, steepening and lowering, with ongoing sea level rise. Unless, the beaches are renourished, the sheet piling would become exposed to wave attack and inundation by higher sea levels. The beach erosion and shoreline retreat would release sediment into the coastal system, which may take place at an increased rate due to greater availability of material (sourced by renourishment). This sediment would be moved eastwards by	The beaches would continue to narrow, steepen and lower as sea levels rise and the volume of beach renourishment would have to be increased to offset higher sea levels. It is expected that by the end of this period, beach renourishment would no longer be sustainable and the sheet piling would be exposed to wave attack and marine erosion. New, renewed defences would be required to prevent erosion of the shoreline and the potential risk of flooding. The beach erosion and shoreline retreat would release sediment into the coastal system, at a rate similar to the previous epoch. Sediment would be moved eastwards by longshore transport.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
East Beach to Church Norton			
		longshore transport.	
Filter 2 Policy B	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	The timber groynes and sheet piling would remain.	The timber groynes and sheet piling would fail. New secondary defences will reduce the risk of flooding at Church Norton. The exact location of the secondary defences will be assessed at strategy level.	No defences. Continued maintenance and upgrading of the secondary defences at Church Norton. The exact location of the secondary defences will be assessed at strategy level.
	It is expected that during the beginning of this period, there would be little change to the existing situation due to the residual life of the defences. The groynes would continue to trap material transported from the south-west. There would be no change to the sediment supplied from updrift. By the end of this period, the groynes would begin to fail. The beaches would retreat and rollback at a rate similar to the historical rate, giving up to 20m of retreat by 2025. Cut-back could occur to the north of seawall at East Beach. The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved eastwards by longshore transport or remain	The sand and shingle beaches would retreat and rollback at a rate accelerated by sea level rise, giving an expected maximum of 70m of retreat by 2055. The sheet piling would become exposed to wave attack and increased sea levels, which without maintenance will fail. The narrow beach will be subject to increased overtopping as sea levels rise. Landward retreat of the shoreline would result in this shoreline cutting-back against that to the south at Selsey, which is currently fixed position by the seawall. Some outflanking, with back-door flooding would occur to the north of the seawall as the shingle beach along this frontage rolls back. Secondary defences would be constructed to prevent flooding at Church Norton.	Landward movement of the shoreline would continue, driven by sea level rise. The shoreline would be expected to retreat some 140m by 2105. The continued retreat of the beach would result in a very narrow beach that would be subject to overtopping, breaching and eventually permanent inundation. There is potential for a small embayment to form and with that, intertidal habitat such as mudflats and saltmarsh, if the coastline at both East Beach and Church Norton remains fixed. The presence of the secondary flood defences constructed at Church Norton during Years 20-50 will prevent any connection of this coastline with that of Pagham Harbour via cutback, outflanking and flooding. Upgrading and an increased

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
East Beach to Church Norton			
	temporarily on local beaches.	Landward movement of the shoreline will release material to be transported down drift to the southern spit at Pagham Harbour. Realignment at this location could affect "The Severals", which are freshwater lagoons and reedbeds within the SPA; compensatory habitat may need to be provided elsewhere.	commitment to maintenance of the secondary flood defences at Church Norton would be required in order to maintain their integrity. Erosion of this and the shoreline at Selsey provides an important source of sediment to the southern spit at Pagham. This shoreline retreat would continue to supply sediment to the coastal system for transport further eastwards. However, formation of an embayment at this location could form a sediment sink, interrupting the longshore transport that presently feeds the coastline at Church Norton and the southern spit at Pagham, therefore threatening its integrity.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural processes, without compromising loss of Assets	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural processes, without compromising loss of esplanade and more than 35 properties.	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural processes, without compromising loss of esplanade and more than 35 properties.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
Filter 2 Policy A	**Hold the Coastal Line and Training Wall** **Managed Realignment of the Inner Harbour, with Secondary Defences**	**Hold the Coastal Line and Training Wall** **Managed Realignment of the Inner Harbour, with Secondary Defences**	**Hold the Coastal Line and Training Wall** **Managed Realignment of the Inner Harbour, with Secondary Defences**
	Long timber groynes on the southern spit and four timber groynes, encased in concrete and extended using rock on the northern (now buried). Both spits would remain through maintenance. The training wall at Pagham Harbour entrance, north, would remain. Renourishment (using material from the banks and bars immediately offshore and exposed at low water) of the southern spit would continue.	Maintain the rock/concrete/timber groynes to maintain the northern spit. Renourishment of the southern spit would continue. Maintain harbour training walls. Maintain inner secondary flood defences around Harbour.	Maintain the rock/concrete/timber groynes to maintain the northern spit. The groynes along the southern spit will become redundant unless the quantity of renourishment is increased. Maintain harbour training walls. Maintain inner flood defences around the Harbour.
	The southern spit would be supplied with sediment from the beach erosion between East Beach and Church Norton and from beach renourishment, and would continue to accrete at its distal end. The long groynes located at the center of the spit, would continue to retain and trap material, helping to widen the beach that may otherwise be subject to rollback, retreat and breaching. The northern spit would continue to accrete in response to the drift reversal brought	Landward movement and rollback of the southern and northern spits would be expected to continue with sea level rise, although the rate at which this takes place along the southern spit would be reduced by the placement of renourishment material. Sediment supply from updrift at Church Norton would continue and the groynes would retain some material, although the shingle beach would begin to narrow. There would be increased overtopping, with	The groynes would help to stabilise the spits by preventing the longshore movement of material along their length. The shingle spits would, however, continue to rollback and breaching and flooding will increase in frequency as sea levels rise. The training walls will maintain the position of Pagham Harbour mouth. As with Years 20-50, the training walls may need to be lengthened in a landwards direction to prevent the spits overriding them, and creating a new harbour

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
	about by the ebb tidal delta. The beach, now stabilised by groynes would continue to accrete and widen, although elongation of the spit would be prevented by the presence of the training wall at its distal end. The harbour entrance would remain in its present location. The rate of accretion along the southern spit, combined with the strength of tidal flow into and out of the main channel, means the tidal flow is unlikely to be of sufficient quantity or power to close the mouth.	the potential for breaching along the narrow central section of the shingle barrier as sea levels rise, although flooding of the hinterland along the flanks of Pagham Harbour would be prevented by the presence of the secondary defences. Maintenance of these structures may be required towards the end of this period. Sediment supply to Aldwick is unlikely to be affected due to the presence of the drift divide at Pagham. Coastal squeeze of the intertidal habitats around the harbour would occur towards the end of this period, as the tidal prism increases with sea level rise, and there is potentially increased exposure to marine inundation if breaching of the southern spit occurs.	entrance. Material will continue to be transported from the south (Church Norton), and from the north (Pagham) towards Pagham Harbour mouth. Sediment supply to Aldwick is unlikely to be affected due to the presence of the drift divide at Pagham. The presence of secondary defences will prevent inundation of the land around Pagham Harbour and “back-door” flooding at Church Norton and the Pagham/Aldwick border. Maintenance of these structures may be required to account for sea level rise. There is potential for the coastal barrier beach to the west of Selsey Bill (at Medmerry in Bracklesham Bay) to breach. In this scenario, there would be added pressure on the secondary defences that protect the inner harbour around Pagham. If the secondary defences are not maintained and the embankment on which the B2145 has been built is not defended to account for sea level rise, then there is potential for a breach to occur from the coastline at Medmerry to Pagham Harbour. A tidal channel would form

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
			and transform Selsey Bill into an island. However, it is thought that any future evolution would also be dependent on the policy decisions of the East Solent Shoreline Management Plan and such a breach would be unlikely to have significant effects on wider shoreline evolution during the next 100 years.
Filter 2 Policy B	**Managed Realignment of the Coastal Line, with Secondary Defences at Specific Areas.** **Hold the Training Wall**	**Managed Realignment of the Coastal Line, with Secondary Defences at Specific Areas.** **Hold the Training Wall**	**Managed Realignment of the Coastal Line, with Secondary Defences at Specific Areas.** **Hold the Training Wall**
	Southern Spit: Allow the long timber groynes to fail. Recycle shingle from the front to the rear of the spit. **Northern Spit:** Allow four timber groynes, encased in concrete and extended using rock on the northern (now buried) to fail (although they will remain during this period). Maintain harbour entrance using training walls.	**Southern Spit:** No defences. Continue to recycle shingle from the front to the rear of the spit. **Northern Spit:** The rock/concrete/timber groynes along the northern spit would fail during this period. Maintain harbour entrance using training walls. **Pagham Harbour:**	There will be no defences. The training walls would be maintained. Maintain and upgrade secondary defences to protect against sea level rise. The exact location of the secondary defences will be assessed at strategy level. Any further management will be dependent on the outcome of further studies.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
	Pagham Harbour: Secondary defences around inner harbour will be needed. The exact location of the secondary defences will be assessed at strategy level. **General:** Habitat and coastal process monitoring (in particular any implications for linking into Church Norton managed realignment and any effects on Pagham north spit and Pagham beach as a result of south spit realignment). Also monitor consequences for SPA/Ramsar objectives.	Maintain secondary defences around inner harbour, and perform secondary realignment to allow additional habitat creation. The exact location of the secondary defences will be assessed at strategy level. **General:** Habitat and coastal process monitoring, used to help determine where and how much realignment (link to south coast CHaMP) and requirements to maintain training wall. Manage a more naturally functioning system.	
	The defences along the northern spit will remain and the training wall will continue to fix the spit at its distal end. As the timber groynes along the southern spit fail, material would no longer be retained along this section of the spit and unconstrained north-eastwards longshore sediment transport would resume. The shingle spit would grow and simultaneously roll back naturally. 7m of retreat could occur by 2025. It is expected that weak points	The training wall would stabilise the northern spit, preventing closure of the existing mouth. Failure of the defences will enable the southern spit to roll back and behave naturally. The southern spit could rollback by as much as 70m by 2055. In the absence of defences, both the northern and southern spits will be subject to increased overtopping and breaching as sea levels rise. There is potential for a new entrance to form at the location of breach, although it is estimated	The shingle spits will retreat and roll back as sea levels rise. There could be as much as 115m of shoreline retreat by 2105 along the southern spit. Extension of the northern spit will be prevented by the training wall, which will help to preserve the integrity of the spit. As the shingle spits roll back in response to sea level rise and a reduction of sediment inputs into the system, they would weaken in their central sections. The spits would be subject to more frequent overtopping and the

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
	would form along the spit, where the groynes once existed. Here there would be an increased risk of breaching and flooding, with the formation of a second temporary opening (although this may not take place until the following epoch). The timing and the length of time for which the new mouth would remain open is unknown The inner harbour would experience greater exposure to wave attack and water levels, eroding the seaward face of the intertidal habitat. Secondary defences constructed around the margins of the harbour would help to reduce the impacts of erosion and potential flooding.	that this will only be temporary whilst the present entrance is held open. During this period, the inner harbour will be subject to increased wave attack and water levels as sea levels rise. The secondary defences would help protect the low-lying hinterland from inundation. The intertidal mudflats and saltmarsh that form the inner harbour will start to erode along its seaward face, and begin to translate landwards as sea levels rise. Under these conditions there is potential for the existing habitat to squeeze against the secondary defences.	potential for breaching, and even breakdown would be more likely. There is potential here for the formation of a new harbour mouth, however, it is thought that it will be subject to periodic breach and closure. The formation of a new permanent inlet is unlikely, as the training wall will maintain the existing position of the northern spit and already acts to concentrate tidal flow. The secondary defences may require additional maintenance, depending on their residual life. Squeeze of the intertidal habitats within the inner harbour is expected to take place as sea levels rise and the secondary defences fix the landward limit of the inner harbour.
Filter 2 Policy C	**Managed Realignment of the Coastal Line, with Secondary Defences at Specific Areas** **No Intervention of the Training Walls**	**Managed Realignment of the Coastal Line, with Secondary Defences at Specific Areas** **No Intervention of the Training Walls**	**Managed Realignment of the Coastal Line, with Secondary Defences at Specific Areas** **No Intervention of the Training Walls**
	Allow defences along northern and southern spit to fail (although they will remain for this period) and allow training wall to fail. The spits will be allowed to function naturally. Secondary defences will be constructed in	The rock/concrete/timber groynes along the northern spit would fail during this period. Maintain the secondary defences. The exact location of the secondary defences will be assessed at strategy level.	No defences. Secondary defences in site-specific areas (Church Norton, Sidlesham and SW Pagham will require maintenance and upgrading as sea levels rise. The exact location of the

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
	site-specific areas (Church Norton, Sidlesham and SW Pagham). The exact location of the secondary defences will be assessed at strategy level.		secondary defences will be assessed at strategy level.
	The northern spit would remain in its present position, fixed by the still existing rock groynes (timber encased). There may be some extension of the spit into the harbour mouth as the spit would no longer be fixed at its distal end. The timber groynes, which are concentrated along the southern spit, would begin to fail during the middle of this period. As the timber groynes failed, material would no longer be retained on the beach and material would be transported towards Pagham Harbour mouth. The southern spit would grow eastwards and simultaneously roll back. The spit would narrow and approximately Up to 10m of retreat could have taken place by 2025. There is potential for erosion and flooding of the inner harbour to occur. Secondary defences will be constructed at key locations where flooding is estimated to occur within the next 0-100 years.	By this period, the harbour mouth will no longer be stable as it returns to a free-functioning system, constrained only by the secondary defences within the inner harbour. With time, the channel would migrate back northwards to its pre-trained position, and will determine the overall behaviour of the spits. Both the northern and southern spits will rollback by as much as 70m. Narrowing, steepening and lengthening of the southern spit will occur as sea levels rise. As the southern spit lengthens, roll back and narrow as sea levels rise, it will be subject to increased overtopping and eventually breaching. A lower, wider and more dissipative beach will result and a new opening will form. In doing so, there are a number of scenarios that could result, the timings of which are unknown, and are likely to occur across the two epochs (years 20-50 and years 50-100):	The behaviour of Pagham Harbour entrance is very much dependent on the timing of the events described in 20-50 year epoch. 115m of shingle rollback/ landward retreat could take place by 2105. Exposure to marine erosion within the harbour will increase, resulting in greater erosion and squeeze of the intertidal habitats against the secondary defences behind. There is potential for the coastal barrier to the west of Selsey Bill (at Medmerry in Bracklesham Bay) to breach. In this scenario, there would be added pressure on the secondary defences that protect the inner harbour around Pagham. If the secondary defences are not maintained, there is potential for a breach to occur from the coastline at Medmerry to Pagham Harbour. A tidal channel would form and transform Selsey Bill into an island. However, it is thought that any future evolution would also be dependent on the

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
		Both the northern and southern openings would remain open The mouth to the north could close and the mouth to the south could become the permanent opening to the harbour. The mouth to the north would remain open and the mouth to the south would be subject to periodic breaching and closure. The ebb tidal delta will migrate with the harbour mouth. Its movement would be determined by the movement of the main tidal channels. The material contained within the existing delta will be re-distributed, although the exact location to where is unknown. This will in turn alter the existing drift reversals whose location is dependent on the location of the ebb tidal delta. The harbour mouth, ebb tidal delta and the sediment movement between them are a self-sustaining system. The system is not being directly driven by sediment supply from updrift, but also movements associated with localised drift reversals round the harbour mouth. The changes to the harbour entrance would be expected to interrupt	policy decisions of the East Solent Shoreline Management Plan and such a breach would be unlikely to have significant effects on wider shoreline evolution during the next 100 years.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
		longshore (eastwards) transport of sediment. During this period, the inner harbour will be subject to increased wave attack and water levels as sea levels rise. The secondary defences would help protect the low-lying hinterland from inundation The intertidal mudflats and saltmarsh that form the inner harbour will start to erode, even attempt to translate landwards as sea levels rise. Under these conditions there is potential for the existing habitat to squeeze against the secondary defences.	
Filter 2 Policy D	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	No active management of spits, training walls would be allowed to fail, allowing natural functioning, existing flood defences allowed to fail and not be replaced.	The rock/concrete/timber groynes along the eastern/northern spit would fail during this period.	No defences or training wall. Existing secondary defences/embankments around Pagham Harbour would fail.
	The northern spit would remain in its present position, fixed by the still existing rock groynes (timber encased). There may be some extension of the spit into the harbour mouth as the spit would no longer be fixed at its distal end, once the training walls have failed.	By this period, the harbour mouth will no longer be stable as it returns to a free-functioning system. With time, the channel would migrate northwards to its pre-trained position, and would determine the overall behaviour of the spits. The shingle spits would rollback, narrowing	The behaviour of Pagham Harbour entrance is very much dependent on the timing of the events described in 20-50 year epoch, and by 2105, as much as 115m of erosion could take place. Exposure to marine erosion within the harbour will increase, resulting in greater

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
	The timber groynes, which are concentrated along the southern spit, would begin to fail during the middle of this period. As the timber groynes fail, material would no longer be retained on the beach and material would be free to be transported towards Pagham Harbour mouth. The southern spit would grow eastwards and simultaneously roll back. The spit would narrow and approximately 7m of retreat could have taken place by 2025. Erosion and flooding of the inner harbour and low-lying hinterland will occur as sea levels rise and the secondary defences fail. New intertidal habitats, mudflats and saltmarsh, will form and existing habitats will develop.	and steepening as sea levels rise, and the southern spit may lengthen. 70m of shoreline retreat could take place by 2055. As the southern spit lengthens, roll back and narrow as sea levels rise, it will be subject to increased overtopping and eventually breaching. A lower and wider more dissipative beach will result and a new opening will form. In doing so, there are a number of scenarios that could result, the timings of which are unknown, and are likely to occur across the two epochs (years 20-50 and years 50-100): Both the northern and southern openings would remain open The mouth to the north could close and the mouth to the south could become the permanent opening to the harbour. The mouth to the north would remain open and the mouth to the south would be subject to periodic breaching and closure. The ebb tidal delta will also migrate with the harbour mouth, driven by the movement of the main tidal channels, and with that, the associated drift reversals. The material contained within the existing delta will be re-	erosion. There is potential for the coastal barrier to the west of Selsey Bill (at Medmerry in Bracklesham Bay) to breach. In this scenario, there would be added pressure on the existing secondary defences he surround the harbour. Without maintenance, they would fail, resulting in a breach that would occur from the coastline at Medmerry to Pagham Harbour. A tidal channel would form and transform Selsey Bill into an island. However, it is thought that any future evolution would also be dependent on the policy decisions of the East Solent Shoreline Management Plan and such a breach would be unlikely to have significant effects on wider shoreline evolution during the next 100 years.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Church Norton to Pagham			
		distributed, although the exact location of this is unknown. The harbour mouth and the sediment movement within it, is a self-sustaining system, and will not be directly driven by sediment supply from updrift, but also movements associated with localised drift reversals round the harbour mouth. The changes to the harbour entrance would be expected to interrupt longshore (eastwards) transport of sediment, with sediment being released in 'pulses'. During this period, the inner harbour will be subject to increased wave attack and water levels as sea levels rise. The intertidal mudflats and saltmarsh that will erode or even translate landwards as sea levels rise. Increased inundation of the low-lying hinterland would occur.	

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Pagham to Aldwick			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	There are no defences and accretion of beach should continue. Monitoring will be required as standard of protection offered reduces with sea level rise	Beaches would start to narrow and defences would be required to hold the line. (New defences could be a sea wall, groynes, recharge, recycling or a combination of the above). Secondary flood defences would be constructed at two places, the first would be at Pagham (extending behind Pagham and along the Aldwick frontage) and the second will be required to stop back-door flooding from Pagham Harbour into Pagham.	Maintain and sustain the new defences.
	Sediment will continue to be supplied to this frontage from the coastline updrift. The historical trend of beach-building would be expected to continue for the next 20 years. Up to 10m of foreshore accretion could occur. The volume of littoral drift decreases to the west, hence the rate of accretion will decrease to the east. The volumes of sediment from this frontage to areas further east would be similar to present supply.	Where the rate of sediment supply is greater than the rate of sea level rise, the beach may widen slightly. However, over this period, the beach would be expected to stabilise as the increasing effects of sea level rise balance the supply of sediment from the west. By the end of this period, the effects of sea level rise will offset beach accretion and the landward limit of the beach will begin to erode. Defences would be required to hold the line. Flooding from overtopping and potential "back-door" flooding from Pagham Harbour would be likely to occur more frequently due to sea level rise. Secondary defences would	The new defences would fix the landward limit of the beach along most of this frontage. Increased commitment to maintenance and upgrading of the new defences would be required as sea levels rise. The beaches would narrow, steepen and lower, supplying the downdrift coastline with a temporary increase of material. Continued loss of beaches would mean that eventually sea meets with the new defences and the secondary flood defence. Upgrading and an increased commitment to maintenance of the flood defences would be required in order to maintain their integrity,

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Pagham to Aldwick			
		be constructed to prevent flooding of the hinterland. There may be some erosion at the most western end of this frontage, as the drift divide is moved north following removal of the defences at training wall at Pagham Harbour. This impact would only be felt in the short term, as the harbour mouth and drift divide would be subject to cyclical change over tens of years. The supply of sediment from this frontage to areas further east would be similar to present.	as they would become more exposed to wave attack (due to the loss of the beach and sea level rise). There would be continued threat of erosion at the western end of this frontage, as the locations of the harbour mouth, the ebb tidal delta and subsequently the zone of erosion, all fluctuate in response to cyclical events taking place at the harbour mouth. Again, this is not a long term response and will take place over tens of years.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Little opportunity as properties back onto beach. No benefits to shoreline - not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto beach. No benefits to shoreline - not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto beach. No benefits to shoreline - not considered due to significant environmental, technical or socio-economic losses.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Pagham to Aldwick			
	processes, without compromising loss of up to 5 properties.	processes, without compromising loss of up to 80 properties.	processes, without compromising loss of more than 150 properties.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Aldwick to Felpham			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The seawall (along the entire frontage), rock groynes (Bognor Esplanade and Felpham) and timber groynes (along the entire frontage) would remain. Renourishment at Felpham would continue.	The rock groynes (Bognor Esplanade and Felpham) and timber groynes (along the entire frontage) would become increasingly redundant as beach narrows. The seawall would continue to function, but will require increased maintenance and upgrading. Increased renourishment at Felpham.	Maintain seawall and upgrade. Renewed defences constructed to prevent outflanking of seawall and flooding of the rest of the frontage. New groynes will be needed to maintain the beach. Increased renourishment at Felpham would be needed to sustain beach levels.
	The landward limit of the beach would be fixed by the seawall. The beach would begin to narrow and steepen and beach levels would begin to lower (except at Felpham). The groynes would slow the rate of narrowing/lowering of the beach, but, overall, the beach would not appear significantly different from the present. The beach erosion would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved eastwards by longshore transport or remain temporarily on local beaches.	The seawall would continue to hold the position of the shoreline, and the landward limit of the beach would be fixed by the seawall. The beach would continue to narrow, steepen and lower as sea level rise continued, except at Felpham, where a reduction in beach volume would be mitigated against via renourishment. By the end of this period, the beach would be lost and the shoreline would lie at the foot of the seawalls. The groynes would become redundant and the seawall would require increased commitment to maintenance and upgrading. Sediment supply to the east by longshore drift would diminish as the beach disappears.	The seawall would continue to hold the position of the shoreline and the landward limit of the beach would be fixed by the seawall. The seawall would be exposed to increased wave attack and sea level rise. There is potential for outflanking of the seawall and flooding of the hinterland as failure of the seawall takes place. By the middle of this period, it would no longer be technically feasible to maintain the seawall. Renewed defences would be required to maintain a hold the line policy. The new groynes would help to maintain the new beach, although it would continue to narrow and steepen and beach levels would lower as sea levels rise. At Felpham, renourishment would need to be of sufficient quantity to offset the impacts of sea level

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Aldwick to Felpham			
			rise.
Filter 2 Policy B	**Advance the Line**	**Advance the Line**	**Advance the Line**
	Regeneration plans for Bognor support a Marina. This is expected to be incorporated into a hold the line policy option, although some assets such as a breakwater, may be built seawards. There will be an interim impact on the processes in this area. Renourishment at Felpham would continue.	Regeneration plans for Bognor support a Marina. This is expected to be incorporated into hold the line policy option, although some assets, such as a breakwater, may be built seawards. There will be an interim impact on the processes in this area. Increased renourishment at Felpham.	Regeneration plans for Bognor support a Marina This is expected to be incorporated into hold the line policy option, although some assets, such as a breakwater, may be built seawards. There will be an interim impact on the processes in this area. Increased renourishment at Felpham would be needed to sustain beach levels.
	The construction of the marina breakwaters would intercept the longshore transport of material along this coastline, and in doing so would act to divide the coastline between Aldwick and Felpham in terms of its behaviour. This behaviour is uncertain and depends on the ability for sediment to bypass the marina breakwaters. To the west of the marina breakwaters (Aldwick to Bognor), the beach would begin to accrete, widen and shallow as material is trapped to the west of the breakwater. To the east, the landward limit of the beach would be fixed by the seawall. The rate of	To the west of the marina breakwaters (Aldwick to Bognor), it is expected that the beach would continue to accrete, although this would be slowed by the impacts of sea level rise. To the east of the marina, the seawall would continue to hold the position of the shoreline, and the landward limit of the beach would be fixed by the seawall. The beach would continue to narrow, steepen and lower as sediment supply from the west is continually reduced by the presence of the breakwater and as sea level rise continues. This would increase the rate of shoreline retreat, such that the shoreline could lie at the foot of the	To the west of the marina breakwaters, the seawall would continue to hold the position of the shoreline. The beaches will narrow and steepen as the sediment available for the accretion in the system becomes depleted and the rate of sea level rise outpaces the rate of accretion. The seawall would be exposed to increased wave attack and sea level rise. By the end of this period, it would no longer be technically feasible to maintain the seawall. Renewed defences would be required to maintain a hold the line policy. The new seawall and groynes would help to maintain the new beach to the east of the

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Aldwick to Felpham			
	sediment supply to the east would be significantly reduced and the beach would begin to narrow and steepen and beach levels would begin to lower at an accelerated rate than under a "hold the line" scenario. The groynes however, would help to slow the rate of narrowing/lowering of the beach. The beach erosion would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved eastwards by longshore transport or remain temporarily on local beaches.	seawalls during this epoch. It would no longer be technically feasible to maintain the seawall. Renewed defences would be required to maintain a hold the line policy. At Felpham, a reduction in beach volume would be mitigated against via renourishment. By the end of this period, the beach would be lost and the shoreline would lie at the foot of the seawalls. The groynes would become redundant and the seawall would require increased commitment to maintenance and upgrading. Sediment supply to the east by longshore drift would diminish as the beach disappears.	breakwaters, although it would continue to narrow and steepen and beach levels would lower as sea levels rise. At Felpham, renourishment would need to be of sufficient quantity to offset the impacts of sea level rise.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Not considered due to significant environmental, technical or socio-economic losses.	Not considered due to significant environmental, technical or socio-economic losses.	Not considered due to significant environmental, technical or socio-economic losses.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	No opportunity to allow natural processes, without compromising loss of esplanade and up to 0 properties. Not considered due to significant environmental, technical or socio-economic losses.	No opportunity to allow natural processes, without compromising loss of esplanade and over 200 properties. Not considered due to significant environmental, technical or socio-economic losses.	No opportunity to allow natural processes, without compromising loss of esplanade and over 400 properties. Not considered due to significant environmental, technical or socio-economic losses.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Middleton-on-Sea			
Filter 2	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The seawall and timber groynes would function adequately.	The seawall and timber groynes would remain. New, renewed defences would be needed at Middleton Point (Old Point Rd), possibly set back to counter localised loss of beach.	Maintain and upgrade existing seawall. Construction of renewed defences, including a seawall and groynes would be required along Middleton Point.
	The seawall would hold the shoreline in its present position. The beach would begin to narrow and steepen, as sea levels rise and the beach is squeezed against the defences behind. The groynes would slow the rate of narrowing/lowering of the beach. Overall, however, the beach would not appear significantly different to its present state, since there would be little change from the current sediment input from updrift. The narrowing and steepening of the beach would supply sediment to the coastal system at a similar rate to the present. Much of this sediment would be moved eastwards by longshore transport, with some remaining temporarily on local beaches.	The seawall would continue to fix the landward limit of the beach. The defences at Middleton Point would be realigned to a renewed, more landwards position than the remainder of the coast to create a more linear coastline. The beach would be squeezed against the existing and new defences at Middleton- Point. The groynes would help to retain some material transported to this frontage from updrift and slow the rate of narrowing/lowering of the beach. Continued narrowing and steepening of the beach would supply sediment to the coastal system at a slightly increased rate than present. Much of this sediment would be moved eastwards by longshore transport,	The beach would experience increased narrowing and steepening as sea levels rise, and the beach would be squeezed against the new and renewed defences behind. A reduction of sediment supply from updrift, in response to the hold the line policy, would promote beach narrowing, resulting in eventual beach loss in front of the seawall. The groynes would become redundant and the seawall would become subject to increased wave attack and sea level rise. An increased commitment to maintenance and upgrading of the seawall would be required. Eventually, the shoreline would lie at the foot of the seawall and it would no longer be technically feasible to maintain the existing wall. Renewed defences would be required

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Middleton-on-Sea			
		with some remaining temporarily on local beaches.	to maintain the policy. The supply of beach-sized sediment to the coastline downdrift would significantly reduce.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic losses.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural processes, without compromising properties back onto beach and loss of up to 0 additional properties.	Not considered due to significant environmental, technical or socio-economic losses.. No opportunity to allow natural processes, without compromising properties back onto beach and loss of more than 40 additional properties.	Not considered due to significant environmental, technical or socio-economic losses. No opportunity to allow natural processes, without compromising properties back onto beach, plus an additional 100 properties.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Elmer (Breakwaters)			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The detached rock breakwaters, rock armour revetment (between reefs 5 and 6), terminal groyne and assorted backshore defences (seawall, breastwork, revetment, groynes) would remain. Beach renourishment/recycling would continue.	Maintain primary defence structures and practices (detached breakwaters, terminal groyne and renourishment/ recycling).	Secondary defences required preventing outflanking to the east. Maintenance of breakwaters and terminal groyne with increased renourishment needed.
	The detached breakwaters, terminal groyne and renourishment/ recycling would maintain the present shoreline position. The breakwaters and groyne would continue, as at present, to interrupt longshore transport, reducing the volume of sediment reaching the coast further east. If managed realignment is allowed to take place downdift of this section, at Poole Place, then cutback is likely to occur to the east of the breakwaters and the coastline would form a promontory.	The detached breakwaters, terminal groyne and renourishment/ recycling would maintain the present shoreline position. The breakwaters and groyne would continue, as at present, to interrupt longshore transport, reducing the volume of sediment reaching the coast further east. If managed realignment is allowed to take place downdrift, at Poole Place, then cutback and outflanking is likely to occur to the east of the breakwaters. Secondary flood defences built for the frontage at Poole Place will need to be extended to protect the hinterland east of the breakwaters from flooding.	The detached breakwaters, terminal groyne and renourishment/ recycling would maintain the present shoreline position. The breakwaters and groyne would continue, as at present, to interrupt longshore transport, reducing the volume of sediment reaching the coast further east. Loss of beach to the west and east would result in the continued formation of this coastline as a promontory. Secondary defences would be required to prevent outflanking to the east of the breakwaters at Poole Place.
Filter 2 Policy B	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Little opportunity as properties back onto	Little opportunity as properties back onto	Little opportunity as properties back onto

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Elmer (Breakwaters)			
	beach. Not considered due to significant environmental, technical or socio-economic losses. There may be merit in smoothing out cutback east of Elmer to limit outflanking, which is discussed as part of the realignment policy for the Poole Place / The Mill (Atherington) / Littlehampton Harbour (River Arun).	beach Not considered due to significant environmental, technical or socio-economic losses. Maintain the revetment and terminal groyne at Poole Place.	beach Not considered due to significant environmental, technical or socio-economic losses. Increased maintenance and upgrading of the revetment at Poole Place. Would require renewed revetment to prevent redundancy.
	Managed realignment of the coast downdrift, between Poole Place and Littlehampton Harbour (River Arun), will result in shoreline retreat, cutback and outflanking adjacent to the terminal groyne at Poole Place. There is potential to prevent outflanking along this frontage, which could be achieved by placing a revetment at Poole Place and reducing the length of the terminal groyne. In doing this, the landward limit of the beach immediately downdrift of the terminal groyne would be fixed in position; and reducing the length of the terminal groyne would permit a greater volume of sediment to bypass the groyne, which would add to the beaches downdrift and reduce cutback. A smoother coastline would result and the risk of flooding by cutback and outflanking	The revetment would fix the landward limit of the beach. The beaches downdrift of the terminal groyne would narrow and steepen as sea levels rise, so that once again the terminal groyne would be too long to permit sufficient bypass of sediment. By the end of this period, the beach downdrift of the terminal groyne would have eroded by 20m and the sea would lie at the toe of the revetment. Unless the revetment is maintained and upgraded to account for sea level rise, there would be overtopping, breaching and eventual flooding of the land behind.	The revetment would become exposed to higher water levels and increased wave attack as sea levels rise. The shoreline could lie approximately 50m from its existing position. It would no longer be technically feasible to upgrade the revetment in its current position, which would require it to be realigned to a renewed position landwards in order to prevent cut-back and outflanking downdrift of the terminal groyne.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Elmer (Breakwaters)			
	would be significantly reduced.		
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Little opportunity as properties back onto beach.	Little opportunity as properties back onto beach.	Little opportunity as properties back onto beach.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The terminal groyne (east of Poole Place), the timber groynes and the timber breastwork at Atherington, would be maintained. Discontinuous lengths of old masonry or concrete walls and lines of large concrete blocks that extend the length of the frontage from Poole Place to "The Mill"; and the concrete wall at Atherington would not be maintained. The training walls at Littlehampton would be maintained. Periodic removal of material from the west side of the harbour entrance for updrift recycling between Atherington and Poole Place would continue.	The terminal groyne, timber breastwork and groynes would be maintained and upgraded. Recycling would continue throughout this period. Renewed defences would be required by the end of this period to hold the line. The amount of recycling would have to be increased to keep pace with sea level rise. The training walls at Littlehampton would be maintained.	Maintain and upgrade renewed defences and the training wall. Continue with beach recycling scheme.
	The landward limit of the beaches would be fixed in their present position by the existing defences along the length of the coastline and by the training wall at the eastern end of this frontage. The beach would begin to narrow and steepen as sea levels rise, except between Poole Place and Atherington, where the placement of recycled material would mitigate against the pressures of sea level rise. The groynes would slow the rate of narrowing/lowering of	The defences would continue to hold the landwards position of the beach, but would require significant maintenance and upgrading to withstand the impacts of sea level rise and increased wave attack. This would be helped by increasing the amount of material recycled to the beaches between Poole Place and Atherington. Along the remainder of the coastline, implementation of a beach renourishment	The beach would experience increased narrowing and steepening as sea levels rise and the beach is squeezed against the linear defences behind. An increased commitment to maintenance and upgrading of the renewed defences would be required as sediment supply from updrift is reduced due to the hold the line policy at Elmer. Continuation of beach recycling along the length of this frontage would help to mitigate against beach losses due to sea level rise,

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
	the beach. Overall, the beach would not appear significantly different to its present state, since there would be little change from the current sediment input from updrift. There would be some narrowing and steepening of the beach which would supply sediment to the coastal system at a similar rate to the present. Much of this sediment would be moved eastwards by longshore transport, with some remaining temporarily on local beaches. Most of this sediment would be trapped by the training wall.	scheme could be used to achieve a hold the line policy. The beaches would continue to narrow and steepen as sea levels rise, but at a reduced rate immediately updrift of the Littlehampton training wall. By the end of this period, the amount of recycling would need to be increased to keep pace with increased beach loss due to sea level rise. Renewed defences would be required to hold the line. The groynes would retain some material on the beach. Continued narrowing and steepening of the beach would supply sediment to the coastal system at a slightly increased rate to present. Much of this sediment would be moved eastwards by longshore transport and be trapped by the training wall.	and the subsequent exposure of the defences.
Filter 2 Policy B	**Managed Realignment**	**Managed Realignment**	**Managed Realignment 1**
	The primary defences (*see below) may be reconfigured to create a number of larger, swash-aligned bays, or the existing primary defences may be allowed to roll back/fail. Secondary flood defences would be constructed to prevent flooding of the	The reconfigured primary defences, secondary flood defences and new linear defence will require maintenance. Periodic recycling or renourishment of the beach may be required. The training walls at Littlehampton would be	The reconfigured primary defences, secondary flood defences and new linear defence will require maintenance. Periodic recycling or renourishment of the beach may be required. The training walls at Littlehampton would be

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
	hinterland. A new linear defence/flood embankment would be constructed to prevent erosion and outflanking of the defences at Elmer. Periodic recycling or renourishment of the beach may be required. The training walls at Littlehampton would be maintained. The shoreline will be fixed in position to the west and the east in accordance with the policies for the adjacent policy units. *Timber groynes, discontinuous lengths of old masonry or concrete walls and lines of large concrete blocks that extend the length of the frontage from Poole Place to "The Mill", timber breastwork at Atherington that has been constructed to protect the coast where a gap in the seawall exists.	maintained. The shoreline will be fixed in position to the west and the east in accordance with the policies for the adjacent policy units.	maintained. The shoreline will be fixed in position to the west and the east in accordance with the policies for the adjacent policy units.
	If the primary defences are reconfigured, a number of larger swash-aligned bays will form. If the existing primary defences are allowed to roll back/fail, the shingle beach and dunes will rollback onto the low-lying hinterland behind. As the coastline realigns, additional sediment would be released into the system, although there would be a continued lack of sediment	The shoreline will be held at its eastern and western ends but continue to realign between. Depending on whether the primary defences are reconfigured, or if the primary defences are allowed to fail, the swash-aligned bays will become more pronounced or the coastline will begin to from crescent-shape held at its eastern and western end respectively.	The swash-aligned bays/crescent form of the shoreline will become more pronounced as the shoreline continues to realign. The degree to which this happens will be determined by the volume and frequency of periodic recycling and renourishment. The highland located east of Poole Place would continue to constrain the extent to which the shingle beach would rollback,

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
	feed from updrift due to the presence of breakwaters and sea level rise. The shingle beach between Poole Place to the south-east of Balifiscourt Hotel will remain. The shingle beaches to the south-east of Balifiscourt Hotel could be subject to increased overtopping, with increased potential for flooding of the hinterland and the potential for intertidal habitat to form. Construction of a secondary defence at a position set-back from the coastline will enable the coastline to realign to a more sustainable position, but prevent inundation of the communities behind. Maintenance of the training walls at Littlehampton will hold the shoreline at its eastern end.	The highland located east of Poole Place would constrain the extent to which the shingle beach would rollback, so the beach would become narrower and steeper as sea levels rise. The shingle beach and dunes to the south-east of Balifiscourt Hotel will continue to rollback and the intertidal habitat will develop further. As sea levels rise, the shingle beach will become more vulnerable to breach and there is potential for more frequent inundation of the intertidal habitat. Maintenance of the secondary defence at a position set-back from the coastline will allow the coastline to realign to a more sustainable position, without large scale inundation of the area. Periodic recycling or renourishment of the beach will help to reduce the potential for more frequent overtopping and risk of breaching events brought about by sea level rise.	resulting in the continued narrowing and steepening of the shingle beach. The rate, at which this takes place, could be determined by the volume and frequency of periodic recycling and renourishment. The risk of breaching through the shingle beach and dunes will increase as sea levels rise, although the frequency and extent to which this happens this will be determined by the volume and frequency of periodic recycling and renourishment. Maintenance of the secondary defence at a position set-back from the coastline will allow the coastline to realign to a more sustainable position, without large scale inundation of the area. The intertidal habitat will become well-established, although the frequency and extent of breaching will determine how the habitat evolves.
Filter 2 Policy C	**Managed Realignment**	**Managed Realignment**	**Managed Realignment 2**
	The primary defences (*see below) may be reconfigured to create a number of larger,	The reconfigured primary defences, secondary flood defences and new linear	The reconfigured primary defences, secondary flood defences and new linear

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
	swash-aligned bays, or the existing primary defences may be allowed to roll back/fail. Secondary flood defences would be constructed to prevent flooding of the hinterland. A new linear defence/flood embankment would be constructed to prevent erosion and outflanking of the defences at Elmer. Periodic recycling or renourishment of the beach may be required. The training walls at Littlehampton would be maintained. The shoreline will be fixed in position to the west and the east in accordance with the policies for the adjacent policy units. *Timber groynes, discontinuous lengths of old masonry or concrete walls and lines of large concrete blocks that extend the length of the frontage from Poole Place to "The Mill", timber breastwork at Atherington that has been constructed to protect the coast where a gap in the seawall exists.	defence will require maintenance. Periodic recycling or renourishment of the beach may be required. The training walls at Littlehampton would be maintained. The shoreline will be fixed in position to the west and the east in accordance with the policies for the adjacent policy units.	defence will require maintenance. The training walls at Littlehampton would be maintained. The shoreline will be fixed in position to the west and the east in accordance with the policies for the adjacent policy units.
	If the primary defences are reconfigured, a number of larger swash-aligned bays will form. If the existing primary defences are allowed to roll back/fail, the shingle beach and dunes will rollback onto the low-lying	The shoreline will be held at its eastern and western ends but continue to realign between. Depending on whether the primary defences are reconfigured, or if the primary defences are allowed to fail, the swash-	The frontage would be held at its eastern and western ends, and realign in between. In the absence of periodic recycling or renourishment of the beach, there will be greater risk breaching of shingle beach and

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
	hinterland behind. As the coastline realigns, additional sediment would be released into the system, although there would be a continued lack of sediment feed from updrift due to the presence of breakwaters and sea level rise. The shingle beach between Poole Place to the south-east of Balifiscourt Hotel will remain. The shingle beaches to the south-east of Balifiscourt Hotel could be subject to increased overtopping, with increased potential for flooding of the hinterland and the potential for intertidal habitat to form. Construction of a secondary defence at a position set-back from the coastline will enable the coastline to realign to a more sustainable position, but prevent inundation of the communities behind. Maintenance of the training walls at Littlehampton will hold the shoreline at its eastern end.	aligned bays will become more pronounced or the coastline will begin to from crescent-shape held at its eastern and western end respectively. The highland located east of Poole Place would constrain the extent to which the shingle beach would rollback, so the beach would become narrower and steeper as sea levels rise. The shingle beach and dunes to the south-east of Balifiscourt Hotel will continue to rollback and the intertidal habitat will develop further. As sea levels rise, the shingle beach will become more vulnerable to breach and there is potential for more frequent inundation of the intertidal habitat. Maintenance of the secondary defence at a position set-back from the coastline will allow the coastline to realign to a more sustainable position, without large scale inundation of the area. Periodic recycling or renourishment of the beach will help to reduce the potential for more frequent overtopping and risk of breaching events brought about by sea level	dunes. Without shingle renourishment, the beaches fronting the highland, to the east of Poole Place would narrow and steepen, and eventually disappear. The shingle beaches to the east would not rollback; instead they would breach, becoming flatter and wider, enabling flooding of the land behind. Without sand renourishment, the sand dunes would erode and breach as sea levels rise. Maintenance of the secondary defence at a position set-back from the coastline will prevent large scale inundation of the area. The intertidal habitat would be subject to continued saline inundation, as a result of overtopping initially, and once the shingle beaches and dunes have broken down, more frequent inundation by the tide and exposure to waves. Eventually, saline lagoons could form or the intertidal habitat could disappear as the rate of accretion is exceeded by the rate of sea level rise.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
		rise.	
Filter 2 Policy D	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	The timber groynes and the western harbour training wall would fail during this period. Possible shingle beach ridge breach as it moved landward. Scour to the front of the concrete and masonry walls leading to some failures. The dunes west of Littlehampton Harbour entrance would be lost to shoreline retreat, which would accelerate at the end of the period as the training walls fails. Annual shingle recycling to between Poole Place and Atherington from the west side of the harbour entrance would cease.	Failure of remaining concrete walls and breastwork. Breach of shingle ridge.	No defences.
	The beach would be expected to narrow, steepen and move landwards once the timber groynes failed and recycling ceased. This would be likely to be a piecemeal process, as the structures would fail at different times on different sections of the frontage due to their age and condition. Cut-back is expected to occur to the east of the Elmer Breakwaters and terminal groyne.	Landward retreat of the shoreline (approximately 75m by 2055) would continue under the influence of sea level rise and the lack of sediment supplied to the frontage from the coastline to the west. There would be a greater probability of breach, overtopping and associated flooding of land behind the beach up to and including the A259 and west bank of the River Arun. The	The shoreline to the west would remain fixed by the terminal groyne at Poole Place. Cut-back and outflanking of the defences at Poole Place would occur as the frontage between here and Littlehampton training wall would be lost to inundation.The low-lying hinterland would be permanently flooded. The remains of the dune ridge would be eroded and eventually lost. There could be

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
	The shingle beach ridge might breach as it moved landward because of the lack of sediment input caused by the Elmer breakwaters and terminal groyne at Poole Place. Rollback of the dunes west of Littlehampton Harbour entrance would be outpaced by the rate of shoreline retreat, which would accelerate at the end of the period with failure of the harbour training wall. Flooding of the hinterland back to and including the A259 and west of the River Arun could take place. A change in shoreline orientation would result in a reduced amount of littoral transport. However, sediment released by the failure of the groynes, beach narrowing/steepening and landward retreat would be available for transport eastwards by longshore drift. Failure of the west harbour training wall at the end of this period would release a large quantity of sediment into coastal system, probably resulting in the growth of a western spit/ bar/delta complex eastwards across the existing harbour entrance. Some sediment would also be transported by longshore drift further	dunes would be lost during this period. There is potential for a new embayment and intertidal habitat to form, although this does however depend upon the frequency of inundation, the availability of sediment and whether such habitat could exist under the exposed conditions that this coastline experiences. The shoreline retreat would continue to supply sediment to the coastal system. It would be expected that much of this sediment would feed the continued growth of spit/bar/delta complex at the Littlehampton Harbour entrance. The spit/bar/delta complex would initially interrupt longshore transport to the east, but would then be expected to enable natural bypassing across the entrance. It would also deflect the harbour entrance to the east. The spit would be prone to breaching, with breakdown of the barrier and redistribution of that material which might result in closure of the existing harbour entrance.	as much as 150m of retreat by 2105. If there is sufficient sediment (shingle) available and longshore sediment transport continues then a barrier beach would form along the length of this coastline, effectively cutting of the flooded area to form a lagoon. A spit bar complex will form, closing the existing harbour entrance. With the mouth fixed on its eastern side by the hold the line policy to the east, it is expected that barrier beach would be subject to a series of episodic and cyclic breaching.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Poole Place to Littlehampton Harbour			
	eastward past the entrance.		
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
River Arun and Arun Valley			
Filter 2	**Hold the Line**	**Hold the Line**	**Hold the Line**
	Maintain the existing clay embankment and vertical walls, revetment and rock slope.	Continue to maintain and where necessary upgrade the existing clay embankment, vertical walls, revetment and rock slope.	Significant investment to sustain the standard of protection offered by the clay embankment, vertical walls, revetment and rock slope would be required during this epoch.
	The shoreline and river banks would remain fixed in their present position. There are no beaches along the east bank, only hard defences. The east bank would be subject to overtopping and breaching during the next 20 years. The intertidal habitats that line the west bank would experience continued erosion at a rate similar to present.	The existing defences would require increased maintenance as sea levels rise and increased exposure to waves occurs throughout this period. The frequency of overtopping and breaching will increase, threatening the integrity of the built assets along the coast. The intertidal habitats will narrow as they become squeezed against the shoreline behind. Increased and more frequent overtopping is expected to take place.	Unless the standard of protection along the east river bank is increased, new defences are constructed along the west bank, it is likely that the river banks will be permanently inundated. The shoreline along the east bank will remain in its present position. The intertidal mudflats and saltmarsh on the west bank, however, will be subject to continued narrowing as sea levels rise and may even be lost within the next 100 years.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Littlehampton to Angmering on Sea			
Filter 2	**Hold the Line**	**Hold the Line**	**Hold the Line**
	Maintain the existing sections of seawalls and rock and timber groynes. Maintain the eastern harbour training wall.	The timber groynes (along the entire frontage), the rock groynes (Rustington) and the sections of seawall would remain. Construction of defences between those existing to prevent the formation of bays and to ensure a hold the line policy. Maintain the eastern harbour training wall.	Maintain timber and rock groynes and replace sections of seawall. Planning and construction of renewed defences, including a seawall and reconstruction of groynes landward will be required by the end of this period. Maintain and upgrade defences built in years 20-50. Maintain the eastern harbour training wall.
	In areas backed by seawalls, the beach would begin to narrow and steepen and beach levels would begin to lower during this period, due to sea level rise. The groynes would slow the rate of narrowing/lowering of the beach and the continued maintenance of the eastern training wall at Littlehampton will reduce the volume of material supplied to the beaches from updrift. These changes would be small and the beach would not appear significantly different to its present state. In areas without seawalls, the beach would narrow and steepen and the shoreline would begin to retreat landward. These retreated sections of the frontage would begin to form embayments between the areas with seawalls. Planning for defences would be	Where present, the seawalls would fix the landward limit of the beach. The beach in these areas would continue to narrow, steepen and lower with ongoing sea level rise. It would be expected that, by the end of this period, these beaches would be lost and the shoreline would lie at the foot of the seawalls. The groynes in these areas would therefore become redundant by the end of this period. Increased commitment to the maintenance of the seawall would be required as it becomes exposed to increased wave attack and higher sea levels, and flooding from overtopping would be likely to occur more frequently due to sea level rise. Landward retreat of the shoreline would continue at the sections of beach not backed	The loss of the beach would lead to the continued damage to the seawall, increased flooding and breaching of the existing seawall. It is expected that by the end of this period it would become technically infeasible to maintain or sustain the seawall in its present position. Instead, it would be necessary to plan for and potentially build a new seawall landward of that existing and replace the groynes. Increased maintenance and upgrading of the defences constructed in years 20-50 will be required to mitigate against sea level rise and increased wave attack. Potential formation of a tidal inlet to the west of Littlehampton under a (No Active Intervention policy) combined with

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Littlehampton to Angmering on Sea			
	required to ensure a hold the line policy. The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to the present. This sediment would be moved eastwards by longshore transport.	by seawalls. Unless new defences are constructed between the existing defences, the embayments would become more pronounced throughout this period, trapping sediment that would otherwise be free to be transported alongshore. There would be an ongoing requirement for removal and reconstruction of the groynes in the embayments, as they become redundant with shoreline retreat. As the beach retreats and sea level rise continues, the shingle beach ridges could breach, flooding areas behind the beach. Maintenance of the western training wall at Littlehampton Harbour will hold the shoreline to the west, preventing the natural bypass of material across the mouth of the River Arun and along the coast. The beach loss and shoreline retreat would continue to release sediment into the coastal system, however, there would be a net reduction in sediment supply to the east as material becomes trapped within the newly formed embayments and the seawalls prevent release of material from the land behind the structures.	maintenance of the eastern training wall at Littlehampton will hold the shoreline to the west, reducing the natural volume of bypass of material across the mouth of the River Arun and along the coast. Renewing the existing seawall would allow the coastline to realign to a more linear form, releasing a temporary supply of material to the coastal system that would potentially become trapped by the newly constructed groynes. The shingle beach would be subject to continued narrowing and steepening/lowering as sea levels rise and the beach is squeezed against the seawall. Overtopping is more likely to occur as sea levels rise.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Littlehampton to Angmering on Sea			
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Not considered due to significant environmental, technical or socio-economic losses. Little opportunity to realign given that properties back straight onto beach and/ or greensward. There will be scope in areas to build up/ replace existing defences. No environmental opportunities other than to maintain open landscape and amenity value.	Not considered due to significant environmental, technical or socio-economic losses. Little opportunity to realign given that properties back straight onto beach and/ or greensward. There will be scope in areas to build up/ replace existing defences. No environmental opportunities other than to maintain open landscape and amenity value.	Not considered due to significant environmental, technical or socio-economic losses. Little opportunity to realign given that properties back straight onto beach and/ or greensward. There will be scope in areas to build up/ replace existing defences. No environmental opportunities other than to maintain open landscape and amenity value.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Not considered due to significant environmental, technical or socio-economic losses and given that properties back straight onto beach and/ or greensward. There will be scope in areas to build up/ replace existing defences. No environmental opportunities other than to maintain open landscape and amenity value.	Not considered due to significant environmental, technical or socio-economic losses and given that properties back straight onto beach and/ or greensward. There will be scope in areas to build up/ replace existing defences. No environmental opportunities other than to maintain open landscape and amenity value.	Not considered due to significant environmental, technical or socio-economic losses and given that properties back straight onto beach and/ or greensward. There will be scope in areas to build up/ replace existing defences. No environmental opportunities other than to maintain open landscape and amenity value.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Ferring/ Kingston			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The timber breastwork (Ferring Rife) and timber groynes (along the entire frontage) would remain.	The timber breastwork (Ferring Rife) and timber groynes (along the entire frontage) would remain. As the shoreline retreats and sea level rise continues, the shingle beach ridges could breach, so reinforcement and raising of the ridge is needed (or new defences constructed).	The timber groynes would remain along most of the frontage but would be redundant at Ferring Rife. Construction of renewed (defence type to be determined) and secondary defences at Ferring Rife would be required as it become infeasible to maintain existing breastwork. Defences against outflanking will be needed as shoreline retreats landward due to sea level rise.
	At Ferring Rife, where timber breastwork protects the land behind the beach from erosion and flooding, the beach would begin to narrow and steepen and beach levels would begin to lower during this period, due to sea level rise. Elsewhere the shoreline would begin to retreat landwards, as the beaches narrow and steepen and the beach levels begin to lower. There would also be increased flooding. These changes would be small and the beach would not appear significantly different to its present state. The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved	The breastwork at Ferring Rife would continue to fix the landward limit of the beach, but would require an increasing commitment to maintenance and upgrading to avoid outflanking. Ferring Rife would stand as a promontory against the remainder of this coastline, trapping sediment to the west, and without new defences, would erode landward. During this period, the beach would continue to narrow, steepen and lower with ongoing sea level rise, enhanced by a reduction in sediment supply from updrift The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to the present. This sediment would be moved eastwards by	The beach would be lost by the end of this period (i.e. the shoreline could lie at the toe of the breastwork) and the groynes at Ferring Rife would become redundant. There would be some cut-back and outflanking to the east as the shoreline at Goring-by-Sea erodes landward resulting in flooding. The Ferring Rife promontory would be eroded as the shoreline returned to a linear form through this period. The reconstruction of timber breastwork would hold the shoreline in its new position. Longshore drift would resume, and construction of new groynes would help to retain some of this material.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Ferring/ Kingston			
	eastwards by longshore transport.	longshore transport.	Accretion of material would soon be offset by sea level rise, so that the beaches would narrow and steepen. It is expected that by the end of this period, the beaches would be narrow, if not lost. Renewed defences would be required to prevent erosion of the shoreline at Ferring Rife and secondary defences would be required to protect the urban areas to the east of Ferring Rife from flooding.
Filter 2 Policy B	**Hold the Line**	**Managed Realignment**	**Managed Realignment**
	The timber breastwork (Ferring Rife) and timber groynes (along the entire frontage) would remain.	The timber breastwork (Ferring Rife) and timber groynes (along the entire frontage) would be allowed to fail. Secondary defences would be constructed to prevent flooding of assets.	Maintain and upgrade secondary defences constructed to prevent flooding.
	At Ferring Rife, where timber breastwork protects the land behind the beach from erosion and flooding, the beach would begin to narrow and steepen and beach levels would begin to lower during this period, due to sea level rise. Elsewhere the shoreline would begin to retreat landwards, as the beaches narrow and steepen and the beach levels begin to lower. There would also be increased flooding. These changes would be	The beach would continue to narrow, steepen and lower during the beginning of this period. As the timber breastwork and groynes fail the shoreline the beach would be expected to move landwards, which by 2050 could be as much as 30m. This would be probably be a piecemeal process, as the structures would fail at different times on different sections of the frontage due to their	The shoreline would effectively translate landwards, with retreat of approximately 60m and flooding of the present beaches. The beach would be narrower and steeper, and the beach profile would be lower. There would be continued narrowing and steepening of the beaches as sea levels rise, with the potential for intertidal habitat creation where flooding occurs.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Ferring/ Kingston			
	small and the beach would not appear significantly different to its present state. The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved eastwards by longshore transport.	age and condition. There is potential for flooding of the low-lying land to the east of Kingston Gorse and for back-door flooding to the east of Ferring Rife. Secondary defences would be required at these locations to mitigate against the loss of land and property. Elsewhere, the hinterland is relatively high, protecting the open spaces from permanent breaching.	Secondary defences would be required to prevent further flooding of the hinterland. This coastline would be aligned to a renewed position and is expected to interrupt the free movement of longshore sediment transport, forming a sink for sediment.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Not considered due to significant environmental, technical or socio-economic losses and loss of 1 property would occur.	Not considered due to significant environmental, technical or socio-economic losses and loss of more than 170 properties would occur.	Not considered due to significant environmental, technical or socio-economic losses and loss of up to 390 properties would occur.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Goring-by-Sea to Worthing			
Filter 2	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The timber groynes (west and east sections of frontage) and the rock groynes (centre of frontage) would remain.	The timber groynes (west and east sections of frontage) and the rock groynes (centre of frontage) would remain. New defences would be required to hold-the line. Secondary defences would be required to prevent flooding of the hinterland by outflanking.	Maintenance and upgrading of the new defences would be required. Progressive reconstruction of the timber groynes (west and east sections of frontage) and the rock groynes (centre of frontage) would be also be required.
	Except for the area immediately west of the rock groynes, the beaches would be expected to narrow, steepen and retreat landwards as the timber groynes fail and sea levels rise. The rock groyne area, however, would be expected to retain its present position. The beach erosion and shoreline retreat would release sediment into the coastal system at a similar rate to that released presently. This sediment would be moved eastwards by longshore transport.	The shoreline would retreat landwards, with loss of beach volumes, as the beaches narrow, steepen and lower as sea levels rise. Increased water depths, foreshore retreat and increased wave exposure due to sea level rise would reduce the ability of the groynes to retain sediment and render them redundant by the end of this period. There would be increased overtopping, breaching and flooding of the hinterland as sea levels rise. New defences would be required to hold the line and prevent landwards movement of the coastline. The groynes would need to be reconstructed in retreated positions in order to continue to function effectively. Secondary defences would be required to prevent flooding of the hinterland by outflanking.	The construction of renewed defences would prevent further retreat of the shoreline. The groynes would help to retain some material, although the beaches would narrow, steepen and lower as sea levels rise. Sediment inputs would be reduced as new defences are rebuilt, restricting the movement of material downdrift. Beach erosion would provide a supply of sediment to the local beaches and for longshore transport to the east.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Goring-by-Sea to Worthing			
		Shoreline erosion would release sediment to be transported to the east by longshore drift. Some material would be retained by the timber and rock groynes, helping to temporarily build the beaches.	
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Little opportunity as properties back onto part of the beach. Areas of open landscape would be lost for little environmental benefit. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto part of the beach. Areas of open landscape would be lost for little environmental benefit. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto part of the beach. Areas of open landscape would be lost for little environmental benefit. Not considered due to significant environmental, technical or socio-economic losses.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Little opportunity as properties back onto part of the beach. Areas of open landscape would be lost for little environmental benefit. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto part of the beach. Areas of open landscape would be lost for little environmental benefit. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto part of the beach. Areas of open landscape would be lost for little environmental benefit. Not considered due to significant environmental, technical or socio-economic losses.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Worthing to Shoreham Harbour			
Filter 2	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The timber groynes, rock groynes, sections of seawall (Worthing), rock revetment (Ham Rd), timber breastwork and western harbour breakwater would remain. Upgrade defences to maintain standard of service due to increased risk from flooding due to sea level rise. Renourishment at Lancing and bypassing across the harbour entrance would continue.	The timber groynes, rock groynes, sections of seawall (Worthing), rock revetment (Ham Rd), timber breastwork and western harbour breakwater would remain. Upgrade defences to maintain standard of service due to increased risk from flooding due to sea level rise. Renourishment at Lancing and bypassing across the harbour entrance would continue.	The sections of seawall, revetment, groynes and breastwork could become progressively redundant, as sea levels rise and renewed defences will be required with access for maintenance. The western harbour breakwater would remain. Renourishment at Lancing and bypassing across the harbour entrance would continue.
	Beaches backed by seawalls/breastwork/ revetment would narrow, steepen and lower. Beaches not backed by seawalls/breastwork/ revetment would narrow and steepen slightly. Less retreat would occur in areas with groynes. The retreated sections of the frontage would begin to form embayments between the defended areas. At Lancing, renourishment would maintain the beach in its present condition. The beach narrowing/steepening, shoreline retreat and erosion of renourishment sediment at Lancing would provide a supply of sediment to the coastal system. This sediment would be carried eastwards by longshore transport	The seawalls would require an increased commitment to maintenance and upgrading to protect from increased wave attack and sea level rise. Flooding from overtopping would be likely to occur more frequently due to sea level rise. There would be continued narrowing, steepening and lowering of the beaches backed by seawalls. Maintaining and upgrading the groynes may help to retain the beach, although it is possible that increased beach loss would result in them becoming redundant. Beaches not backed by seawalls would narrow and steepen, and the shoreline would	Beaches backed by seawalls would be lost. Renewed defences would be required to prevent cut-back and outflanking of the seawalls. The new defences would form the new coastline. The coastline would switch from a series of bays and promontories to a more linear form, with the ability for longshore drift to take place to the east. This sediment would become trapped at Shoreham Beach by the western harbour breakwater, from where some material would be bypassed to the east. The beaches along this frontage would continue to narrow, steepen and lower where backed by seawalls, and narrow and steepen

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Worthing to Shoreham Harbour			
	and trapped on Shoreham Beach by the western harbour breakwater. Shoreham Beach would also be expected to maintain its present condition due to the balance achieved by the effective trapping of sediment by the western breakwater and the bypassing. Whilst sediment recycling detracts from the beach volumes to the west of the harbour, bypassing would provide an important feed of sediment eastwards across the harbour entrance.	begin to erode landwards. These retreating sections of the frontage would form increasingly pronounced embayments, and the sections backed by seawalls would from more pronounced promontories. Sediment eroded from the promontories would be transported east and become trapped in the adjacent bays. The amount of sediment being transported eastwards by longshore drift would reduce and the beaches to the west of Shoreham Harbour western breakwater would begin to diminish. As beaches narrow and sea level rise continues, the shingle beach ridges could breach in low-lying areas such as Sompting, Brooklands Park and Widewater Lagoon, flooding areas behind the beaches. There is potential for these sections of coastline to form tidal inlets, subject to a cycle of breaching, closure and reformation. Renourishment at Lancing would mitigate against beach loss caused by sea level rise, and help to protect against overtopping.	where defended by breastwork and groynes (if they have not failed) as sea levels rise and sediment input into this frontage decreases due to the construction of new defences updrift.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There is some localised natural advancement of the line, dependent on the	There are no benefits to this policy option at	There are no benefits to this policy option at

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Worthing to Shoreham Harbour			
	existing harbour breakwater. Otherwise, there are no benefits to this policy option at this location.	this location.	this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	There is little opportunity to realign with the exception of Lancing. Environmental opportunities with Lancing lagoon, recreation of habitat.	There is little opportunity to realign with the exception of Lancing. Environmental opportunities with Lancing Lagoon, recreation of habitat. A renewed defence would be needed at those properties backing the lagoon.	There is little opportunity to realign with the exception of Lancing. Environmental opportunities with Lancing Lagoon, recreation of habitat. A renewed defence would be needed at those properties backing the lagoon.
	At present, water is artificially pumped into the lagoon at Lancing as part of the Lancing Sea Defence Scheme. This is a mitigation measure to mimic percolation rates that occured prior to the beach recharge scheme (and widening of the beach). The only assets along this coastline are huts; hence it is thought that the lagoon could provide more benefit as a site for potential future realignment. If the defences along the frontage were allowed to fail, the shingle beach would narrow, steepen and rollback as sea levels rise. The shoreline would remain in its present position for this period only. The	During this period, the shingle beach could retreat by as much as 120m, and could be subject to breaching as sea levels rise, so that the lagoon becomes connected to the sea. There is potential for breaching to occur at several locations along the length of the shingle beach, although these openings will be temporary features that are subject to periodic breach and closure. With time (this or the next epoch), it is likely that the shingle ridge will translate landwards, so that this section of coastline develops into an embayment. The embayment could limit the free movement of sediment alongshore, thus forming a	Continuation of processes described in Years 20-50, although the coastline would be fixed in its 2055 position, as part of the managed realignment programme.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Worthing to Shoreham Harbour			
	shingle beach will be subject to increased overtopping and there is potential for breaching.	store/sink of sediment and reducing the supply to downdrift sections of coastline at Shoreham.	
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	No benefits to shoreline as few benefits would be realised - not considered due to significant environmental, technical or socio-economic losses.	No benefits to shoreline as few benefits would be realised - not considered due to significant environmental, technical or socio-economic losses.	No benefits to shoreline as few benefits would be realised - not considered due to significant environmental, technical or socio-economic losses.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
River Adur and Adur Valley			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	Maintain the existing river walls and embankments.	Maintain the existing river walls and embankments. Increased maintenance and upgrading will be required during this epoch.	Continue to maintain and upgrade the river walls and embankments. The construction of new defences will be required as is it is likely to no longer be technically feasible to maintain the existing structures.
	The shoreline and river banks would remain fixed in their present position. The intertidal habitats that have developed in the lee of the spit would experience continued erosion at a rate similar to present. The intertidal habitats that have developed in the more upstream reaches could afford the river banks some protection, although it is expected that existing river walls and embankments would be subject to overtopping and breaching during the next 20 years.	The existing defences would require increased maintenance as sea levels rise and increased exposure to waves occurs throughout this period. The frequency of overtopping and breaching will increase, threatening the integrity of the built assets along the coast. The intertidal habitats will narrow as they become squeezed against the shoreline behind. Increased and more frequent overtopping is expected to take place.	Unless the standard of protection along the east river bank is increased, new defences are constructed along the west bank, it is likely that the river banks will be permanently inundated. The shoreline along the east bank will remain in its present position. The intertidal mudflats and saltmarsh however, will be subject to continued narrowing as sea levels rise and may even be lost within the next 100 years.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location - not considered due to significant environmental, technical or socio-economic losses.	There are no benefits to this policy option at this location - not considered due to significant environmental, technical or socio-economic losses.	There are no benefits to this policy option at this location - not considered due to significant environmental, technical or socio-economic losses.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**

	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Shoreham Harbour (Southwick)			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	All existing structures would remain. The concrete seabee revetment, splash wall, east pier and eastern harbour breakwater (all at the harbour entrance), the steel sheet-piled wall at Basin Rd. Shingle bypassing across the harbour entrance would continue.	All existing structures would remain, for the majority of this period. Increased risk from cutback, outflanking and flooding would require the defences to be raised or set back. Shingle bypassing across the harbour entrance would continue.	Groynes would become redundant due to sea level rise. New groynes would be required in conjunction with raised sea defences. Shingle bypassing across the harbour entrance would continue.
	Most of the frontage is backed by revetment or sheet-piled wall. These structures would fix the landward limit of the beaches while the beaches would begin to narrow, steepen and lower. The short sections of beach without revetment or sheet-piled wall would steepen and narrow and the shoreline would retreat landward. These retreated sections of the frontage would begin to form embayments between the areas with revetment/sheet-piled wall. At Basin Rd, bypassing would maintain the beach in its present condition. The beach narrowing/steepening, shoreline retreat and erosion of bypassed sediment would provide a supply of sediment to the coastal system. This sediment would be carried eastwards by longshore transport.	The landward limit of the beaches would remain fixed by the revetment and sheet-piled wall and there would be continued beach narrowing, steepening and lowering. The short sections of beach without revetment or sheet-piled wall would continue to steepen and narrow and the shoreline would retreat further landward. There would be a pronounced system of bays and promontories along this frontage. Transfer of sediment between the bays will be minimised by the presence of promontories and the groynes will continue to trap some material. Flooding by overtopping will increase as sea levels rise and breaching will increase in frequency if the defences fail. Hence, the defences would require increased commitment to maintenance and upgrading	As sea levels rise, continued narrowing and steepening of the beaches will occur, and where backed by seawalls beach lowering will take place. At Basin Rd, bypassing and renourishment will help to maintain the beach, although beaches will narrow, steepen and lower as sea level rise. Material eroded from the beaches will supply a source of sediment to be transported to the east.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Shoreham Harbour (Southwick)			
		of the structures during this period. Unless, the seawalls are renewed to a more landwards position, by the end of this period the beach fronting the seawall will be lost, resulting in cut-back and outflanking of the seawalls and flooding of Hove Lagoon.	
Filter 2 Policy B	**Hold the Line**	**Hold the Line**	**Managed Realignment**
	The following structures would remain: the concrete seabee revetment, splash wall, east pier and eastern harbour breakwater (all at the harbour entrance) and the steel sheet-piled wall at Basin Rd. Sediment bypassing across the harbour entrance would continue.	The following structures would remain: the concrete seabee revetment, splash wall, east pier and eastern harbour breakwater (all at the harbour entrance) and the steel sheet-piled wall at Basin Rd. Sediment bypassing across the harbour entrance would continue.	Allow existing structures to fail, resulting in an increased risk to port from erosion and flooding. The port would eventually close with the associated economic and social impacts.- New defences and secondary flood defences would be required along the coastline at the back of the port. Shingle bypassing across the harbour entrance would continue.
	Most of the frontage is backed by revetment or sheet-piled wall. These structures would fix the landward limit of the beaches while the beaches would begin to narrow, steepen and lower. The short sections of beach without revetment or sheet-piled wall would steepen and narrow and the shoreline would retreat landward. These retreated sections of the frontage would begin to form	The landward limit of the beaches would remain fixed by the revetment and sheet-piled wall and there would be continued beach narrowing, steepening and lowering. The short sections of beach without revetment or sheet-piled wall would continue to steepen and narrow and the shoreline would retreat further landward. There would be a pronounced system of bays and	The harbour breakwater would fix the western entrance to the harbour mouth. Approximately 40m of landward retreat of the shoreline at Southwick would take place and the harbour inlet behind would close. The land on which the port exists would erode and eventually a wide mouth would form. New coastal and flood defences would be required to protect the new coastal line from

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Shoreham Harbour (Southwick)			
	embayments between the areas with revetment/sheet-piled wall. At Basin Rd, bypassing would maintain the beach in its present condition. The beach narrowing/steepening, shoreline retreat and erosion of bypassed sediment would provide a supply of sediment to the coastal system. This sediment would be carried eastwards by longshore transport.	promontories along this frontage. Transfer of sediment between the bays will be minimised by the presence of promontories and the groynes will continue to trap some material. Flooding by overtopping will increase as sea levels rise and breaching will increase in frequency if the defences fail. Hence, the defences would require increased commitment to maintenance and upgrading of the structures during this period. Unless, the seawalls are renewed to a more landwards position, by the end of this period the beach fronting the seawall will be lost, resulting in cut-back and outflanking of the seawalls and flooding of Hove Lagoon.	erosion and flooding due to sea level rise. The port would eventually close, with large economic losses and additional impacts. There will be alterations to the pattern of sedimentation at the mouth, and the longshore transport of sediment will be free to take place towards Portslade-by-Sea.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	Redevelopment plans for Shoreham Harbour include land reclamation (29 hectares) to the east at Southwick, which we would expect to be incorporated into a hold the line policy option. It is expected that the reclamation will have little impact on the coastal processes in the area, since the development will be constructed in the lee of the existing breakwaters. The existing beach at	Redevelopment plans for Shoreham Harbour include land reclamation (29 hectares) to the east at Southwick, which we would expect to be incorporated into a hold the line policy option. It is expected that the reclamation will have little impact on the coastal processes in the area, since the development will be constructed in the lee of the existing breakwaters. The existing beach at	Redevelopment plans for Shoreham Harbour include land reclamation (29 hectares) to the east at Southwick, which we would expect to be incorporated into a hold the line policy option. It is expected that the reclamation will have little impact on the coastal processes in the area, since the development will be constructed in the lee of the existing breakwaters. The existing beach at

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Shoreham Harbour (Southwick)			
	Southwick will be lost; however, this will be replaced with an artificial beach, built into the reclaimed frontage. Bypassing across the harbour mouth will continue, although the volume of material will be increased. Cross-shore structures will be constructed to limit erosion of the recharged beach. The beaches at Portslade-on-Sea to Hove will therefore be maintained. Reclamation works are due to begin in 2010.	Southwick will be lost; however, this will be replaced with an artificial beach, built into the reclaimed frontage. Bypassing across the harbour mouth will continue, although the volume of material will be increased. Cross-shore structures will be constructed to limit erosion of the recharged beach. The beaches at Portslade-on-Sea to Hove will therefore be maintained. Reclamation works are due to begin in 2010.	Southwick will be lost; however, this will be replaced with an artificial beach, built into the reclaimed frontage. Bypassing across the harbour mouth will continue, although the volume of material will be increased. Cross-shore structures will be constructed to limit erosion of the recharged beach. The beaches at Portslade-on-Sea to Hove will therefore be maintained. Reclamation works are due to begin in 2010.
	Detailed study and modelling concludes that the proposed development would have little impact of the existing sediment transport regime, and therefore coastline change up or down-drift of the development. Refer to Halcrow (2000)[1].	Detailed study and modelling concludes that the proposed development would have little impact of the existing sediment transport regime, and therefore coastline change up or down-drift of the development. Refer to Halcrow (2000)[1].	Detailed study and modelling concludes that the proposed development would have little impact of the existing sediment transport regime, and therefore coastline change up or down-drift of the development. Refer to Halcrow (2000) [1].
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic

[1] Halcrow, 2000. Shoreham Port Reclamation Project. Preliminary Design. Draft Report. Report prepared for Shoreham Port Authority, September 2000.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Shoreham Harbour (Southwick)			
	losses.	losses.	losses.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic losses.	Little opportunity as properties back onto beach. Not considered due to significant environmental, technical or socio-economic losses.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Portslade-by-Sea to Brighton Marina			
Filter 2	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The concrete seawall at Portslade-on-Sea, the rubble defences at Aldrington, the timber groynes, the rock groynes, the concrete groynes, the West Hove to Brighton seawall and the Brighton Marina structures (breakwaters, sheet-piled walls, artificial shingle beach) will remain.		Maintain and upgrade all defences, and protect from marine exposure with the use of groynes and beach renourishment. There may be the potential need to renew the defences.
	Beaches backed by seawalls would narrow, steepen and lower. Immediately west of Brighton Marina, the beach would be expected to widen. The beach narrowing/steepening would provide a supply of sediment to the coastal system, releasing sediment into the coastal system at a similar rate to that released presently. This sediment would be carried eastwards by longshore transport, becoming trapped by groynes as it moves along the coast to Kemp Town Beach by the marina breakwater. The coastal cliffs at the eastern end of this frontage would be protected from wave attack by the marina. They would therefore not be expected to retreat at all.	The landward limit of the beaches would remain fixed by the linear defences and there would be continued beach narrowing, steepening and lowering as sea levels rise. The extent of beach loss between West Hove and Brighton would be reduced with the process of recycling and renourishment. Erosion of the beaches would supply sediment to the coastal system which would be carried eastwards by longshore transport, temporarily stored by groynes as it moves along the coast. The coastal cliffs at the eastern end of this frontage would be protected from wave attack by the marina.	The beaches would continue to narrow, steepen and lower, becoming lost by the end of this period. The seawalls would be exposed to increased wave attack and overtopping as sea levels rise. In order to hold the line at this location (and not renew the existing defences), the seawalls would have to be maintained and upgraded. The beaches would also need to be maintained, which between Hove and Brighton could be achieved with groynes and beach renourishment. The only sediment supply to this frontage is from the bypassing of material around Shoreham Harbour, although this will be insufficient to maintain the beaches. The groynes would become redundant.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Portslade-by-Sea to Brighton Marina			
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.	No added benefit to this option, as few environmental/ landscape opportunities, and loss of assets would occur.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Brighton Marina to Rottingdean			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The seawall, rock revetment, concrete and rock groynes would remain.	Maintain the seawall and rock revetment. The groynes would become redundant. There is some occasional recycling of material at Rottingdean, which would continue. This programme of beach recycling could be extended to the west to supplement beach levels in the west and help to prevent groyne failure.	Continually upgrade the seawall and groynes. There is potential for extending the programme of recycling to cover the length of this frontage (in addition to just Rottingdean) where the groynes have failed.
	The existing beaches would begin to steepen, narrow and lower while the shoreline position would be fixed by the seawall/revetment. Cliffs protected by the seawall at their base, will retreat at a slower rate, although they will have a tendency to degrade back at a shallow angle due to the effects of cliff top erosion. Cliff top erosion is driven by sub-aerial weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints;	The seawall/ revetment would continue to hold the position of the shoreline and no significant cliff erosion by marine forcing would be expected provided that the seawall/revetment were upgraded and maintained as required. The cliff top will continue to erode via sub-aerial weathering processes. The rate at which this takes place is variable, taking place at a rate similar to the historic or episodically, due to one-off events. It is also anticipated that increased rainfall, resulting from climate change, will in turn increase the rate of cliff top erosion. The beaches would continue to narrow, steepen and lower with ongoing sea level rise. It would be expected that, during this period, these beaches would be lost and the	The situation would continue in a similar manner to the 20-50 year epoch, with increased maintenance demands and further upgrading necessary for the seawall/revetment. The seawall/revetment, assuming that it is upgraded and maintained, would continue to hold the shoreline position and protect the cliffs from wave attack. Therefore, no significant erosion of the cliff toe by marine forcing would be expected. Cliff top erosion however, would continue to take at an increased rate as sub-aerial weathering processes themselves increase in response to a greater amount of rainfall resulting from climate change. Beach renourishment of the western end of this frontage could be used to reduce the

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Brighton Marina to Rottingdean			
	• Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The eroding cliffs and beaches would provide limited sediment input into the coastal system. This material would progressively be moved eastwards by longshore transport, with some being trapped by groynes as it moved along the coast.	shoreline would lie at the foot of the seawall/ revetment. The groynes in these areas would therefore become redundant. Along the entire frontage, the wave-cut platform seaward of the seawall/revetment would lower, exposing the seawall/revetment to increased wave attack and potentially threatening the structures' foundations. Upgrading and increased maintenance would be necessary to preserve the integrity and function of the seawall/revetment. As the beaches were lost during this period, the limited sediment supply to the frontage would reduce further. By the end of the period, sediment derived from cliff top erosion and wave-cut platform lowering would provide the only source of sediment.	maintenance and upgrading requirement by providing protection to the seawall/revetment. The groynes along the western frontage would therefore become functional again (provided that they have not failed). Sediment supply would remain limited to that provided by erosion of the cliff top, renourishment material and wave-cut platform lowering.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Brighton Marina to Rottingdean			
Filter 2 Policy B	**Hold the Line**	**Hold the Line**	**Managed Realignment**
	The seawall, rock revetment, concrete and rock groynes would remain.	Maintain the seawall and rock revetment. The groynes will become redundant. There is some occasional recycling of material at Rottingdean, which would continue. This programme of beach recycling could be extended to the west to supplement beach levels in the west and help to prevent groyne failure.	Allow existing defences to fail and cliffs to retreat. Implement relocation of services and infrastructure.
	The existing beaches would begin to steepen, narrow and lower while the shoreline position would be fixed by the seawall/revetment. Cliffs protected by the seawall at their base, will retreat at a slower rate, although they will have a tendency to degrade back at a shallow angle due to the effects of cliff top erosion. Cliff top erosion is driven by sub-aerial weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints;	The seawall/ revetment would continue to hold the position of the shoreline and no significant cliff erosion by marine forcing would be expected provided that the seawall/revetment were upgraded and maintained as required. The cliff top will continue to erode via sub-aerial weathering processes. The rate at which this takes place is variable, taking place at a rate similar to the historic or episodically, due to one-off events. It is also anticipated that increased rainfall, resulting from climate change, will in turn increase the rate of cliff top erosion. The beaches would continue to narrow, steepen and lower with ongoing sea level rise. It would be expected that, during this period, these beaches would be lost and the	The beach would narrow and steepen, and eventually be lost as sea levels rise. Failure of the revetment and seawall would follow as exposure conditions increase. The cliff base and cliff top would erode and the wave-cut platform would widen as the cliffs retreat inland. The cliffs, previously fixed in position by defences, could erode at a slightly faster rate than the adjacent coastline, as they realign themselves. Pockets of sediment would be trapped within the small coves formed in the cliffs. Cliff erosion of 40m, due to marine and sub-aerial erosion could be possible by 2105. Any properties/built assets at risk will be

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Brighton Marina to Rottingdean			
	• Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The eroding cliffs and beaches would provide limited sediment input into the coastal system. This material would progressively be moved eastwards by longshore transport, with some being trapped by groynes as it moved along the coast.	shoreline would lie at the foot of the seawall/ revetment. The groynes in these areas would therefore become redundant. Along the entire frontage, the wave-cut platform seaward of the seawall/revetment would lower, exposing the seawall/revetment to increased wave attack and potentially threatening the structures' foundations. Upgrading and increased maintenance would be necessary to preserve the integrity and function of the seawall/revetment. As the beaches were lost during this period, the limited sediment supply to the frontage would reduce further. By the end of the period, sediment derived from cliff top erosion and wave-cut platform lowering would provide the only source of sediment.	relocated to a more landwards location, away from the 100 year risk zone.
Filter 2 Policy C	**Hold the Line**	**Hold the Line**	**No Active Intervention**
	Maintain the seawall, rock revetment, concrete and rock groynes	Maintain the seawall and rock revetment. The groynes will become redundant. Beach renourishment would continue at Rottingdean. The programme of beach renourishment could be extended to the west to supplement beach levels in the west and help to prevent groyne failure.	Allow existing defences to fail and cliffs to retreat.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Brighton Marina to Rottingdean			
		Plan relocation of A259 and Sewage works/pipeline.	
	The existing beaches would begin to steepen, narrow and lower while the shoreline position would be fixed by the seawall/revetment. Cliffs protected by the seawall at their base, will retreat at a slower rate, although they will have a tendency to degrade back at a shallow angle due to the effects of cliff top erosion. Cliff top erosion is driven by sub-aerial weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints; • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur	The seawall/ revetment would continue to hold the position of the shoreline and no significant cliff erosion by marine forcing would be expected provided that the seawall/revetment were upgraded and maintained as required. The cliff top will continue to erode via sub-aerial weathering processes. The rate at which this takes place is variable, taking place at a rate similar to the historic or episodically, due to one-off events. It is also anticipated that increased rainfall, resulting from climate change, will in turn increase the rate of cliff top erosion. The beaches would continue to narrow, steepen and lower with ongoing sea level rise. It would be expected that, during this period, these beaches would be lost and the shoreline would lie at the foot of the seawall/ revetment. The groynes in these areas would therefore become redundant. Along the entire frontage, the wave-cut platform seaward of the seawall/revetment would lower, exposing the seawall/revetment to increased wave attack and potentially	The beach would narrow and steepen, and eventually be lost as sea levels rise. Failure of the revetment and seawall would follow as exposure conditions increase. The cliffs would erode due to marine erosion and sub-aerial weathering processes. The wave-cut platform would widen as the cliffs retreat inland. The cliffs, previously fixed in position by defences, could erode at a slightly faster rate than the adjacent coastline, as they realign themselves. Pockets of sediment would be trapped within the small coves formed in the cliffs. Cliff erosion of 40m, accounting for marine and sub-aerial erosion could be possible by 2105. Loss of properties/built assets would occur.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Brighton Marina to Rottingdean			
	episodically, with up to 5-10m of retreat at a time. The eroding cliffs and beaches would provide limited sediment input into the coastal system. This material would progressively be moved eastwards by longshore transport, with some being trapped by groynes as it moved along the coast.	threatening the structures' foundations. Upgrading and increased maintenance would be necessary to preserve the integrity and function of the seawall/revetment. As the beaches were lost during this period, the limited sediment supply to the frontage would reduce further. By the end of the period, sediment derived from cliff top erosion and wave-cut platform lowering would provide the only source of sediment.	
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Not technically feasible for this period.	Not technically feasible for this period.	Not technically feasible, with this combination of policies. Refer to Filter 2 Policy B above.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location -	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Without forward planning to relocate the road and sewerage infrastructure, there is little opportunity for this policy.	Without forward planning to relocate the road and sewerage infrastructure, there is little opportunity for this policy.	Without forward planning to relocate the road and sewerage infrastructure, there is little opportunity for this policy.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Rottingdean to Saltdean			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The timber/blockwork groynes, concrete and rock groynes, seawall and rock revetment would remain.		The seawall would remain, although the standard of protection offered by the rock revetment would fall. Maintain and upgrade the current defences and replace where necessary. The groynes would be redundant.
	The shoreline position would be held by the seawall/revetment. Cliffs protected by the seawall at their base will retreat at a slower rate, although they will have a tendency to degrade back at a shallow angle due to the effects of cliff top erosion. Cliff top erosion is driven by sub-aerial weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides)	The seawalls and rock revetment would fix the landward position of the beach but not the cliff top. The cliff top would continue to eroded via sub-aerial weathering processes, at a rate that is likely to increase resulting from a rise in the amount of rainfall due to climate change. The rate at which this takes place is variable and it could occur a constant rate, or episodically, with up to 5-10m of cliff erosion in one event. The beaches would continue to narrow, steepen and lower at the beginning of this period, and the groynes would retain some material. By the end of this period, the beach would be lost and the shoreline would lie at the foot of the seawall/revetment. The groynes would become redundant. Increased commitment to the maintenance and upgrade of the seawall would be required as it becomes exposed to increased wave	Assuming the seawall and revetment are upgraded and maintained, the defences would continue to hold the shoreline in position though cliff top erosion would continue through sub-aerial weathering process. The rate of cliff top erosion is expected to significantly increase over the next 100 years, due to a rise in rainfall resulting from climate change. It is possible that, during this period, it would no longer be technically feasible to maintain or sustain/upgrade the defences due to the greater wave attack and sea level rise. Overtopping of the seawall would cause erosion of the cliff face and subsequently the cliff top. The wave-cut platform would continue to lower as sea levels rise. Erosion of the cliffs and fronting beaches, would supply some sediment to the coastal

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Rottingdean to Saltdean			
	It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The existing beaches would begin to steepen, narrow and lower. Sediment released by erosion of the cliffs, the fronting beaches and wave-cut platform lowering, would be available for transport eastwards by longshore drift and for local pocket beaches. This material would progressively be moved eastwards by longshore transport, with some being temporarily trapped by groynes.	attack and overtopping as sea levels rise. Sediment transport along this section would be minimal, with fresh supply only sourced by cliff failure, rock falls and wave-cut platform lowering.	system to be transported to the east.
Filter 2 Policy B	**Hold the Line**	**Hold the Line**	**Managed Realignment**
	The timber/blockwork groynes, concrete and rock groynes, rock revetment and seawall would remain.		Allow existing defences to fail and cliffs to retreat. Implement relocation of services and infrastructure.
	The shoreline position would be held by the seawall/revetment. Cliffs protected by the seawall at their base will retreat at a slower rate, although they will have a tendency to degrade back at a shallow angle due to the effects of cliff top erosion. Cliff top erosion is driven by sub-aerial	The seawalls and rock revetment would fix the landward position of the beach but not the cliff top. The cliff top would continue to eroded via sub-aerial weathering processes, at a rate that is likely to increase resulting from a rise in the amount of rainfall due to climate change. The rate at which this takes	The beach would narrow and steepen, and eventually be lost as sea levels rise. Failure of the revetment and seawall would follow as exposure conditions increase. The cliffs would erode and the wave-cut platform would widen as the cliffs retreat inland. The cliffs previously fixed in position by

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Rottingdean to Saltdean			
	weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The existing beaches would begin to steepen, narrow and lower. Sediment released by erosion of the cliffs, the fronting beaches and wave-cut platform lowering, would be available for transport eastwards by longshore drift and for local pocket beaches. This material would progressively be moved eastwards by longshore transport, with some being temporarily trapped by groynes.	place is variable and it could occur a constant rate, or episodically, with up to 5-10m of cliff erosion in one event. The beaches would continue to narrow, steepen and lower at the beginning of this period, and the groynes would retain some material. By the end of this period, the beach would be lost and the shoreline would lie at the foot of the seawall/revetment. The groynes would become redundant. Increased commitment to the maintenance and upgrade of the seawall would be required as it becomes exposed to increased wave attack and overtopping as sea levels rise. Sediment transport along this section would be minimal, with fresh supply only sourced by cliff failure, rock falls and wave-cut platform lowering.	defences could erode at a slightly faster rate than the adjacent coastline as they realign themselves. Cliff erosion of 40m due to both marine and subaerial erosion, could occur by 2105. Pockets of sediment would be trapped within the small coves formed in the cliffs. Any properties/built assets at risk will be relocated to a more landwards location, away from the 100 year risk zone.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Rottingdean to Saltdean			
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Not considered due to significant environmental, technical or socio-economic losses, including little opportunity for environmental enhancement.	Not considered due to significant environmental, technical or socio-economic losses, including little opportunity for environmental enhancement.	Not considered due to significant environmental, technical or socio-economic losses, including little opportunity for environmental enhancement.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	0 properties at risk. Little opportunity for environmental enhancement.	Not considered due to significant environmental, technical or socio-economic losses, including little opportunity for environmental enhancement - around 40 properties at risk.	Not considered due to significant environmental, technical or socio-economic losses, including little opportunity for environmental enhancement - around 50 properties at risk.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Telscombe Cliffs			
Filter 2 Policy A	**Hold the line**	**Hold the Line**	**Hold the Line**
	It is assumed that the concrete seawall and groynes protecting Portobello outfall would remain. Otherwise, there are no defences.	The concrete seawall and groynes that protect Portabello outfall will need maintaining and upgrading. Otherwise, there are no defences.	
	The unprotected cliffs would continue to erode, due to both marine erosion and sub-aerial weathering processes, including: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) Clifftop retreat of 10m would be expected by 2025, except in the protected outfall area. It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The wave-cut platforms would continue	Increased rainfall due to climate change would increase the rate of cliff top erosion, whilst sea level rise would increase the rate of cliff toe erosion along the frontage. 30m of clifftop retreat could occur by 2055, except at Portobello outfall, which would not be expected to experience significant erosion. Here, the seawall and groynes would require maintenance and an upgrading as sea levels rise and overtopping increases. The wave-cut platform would widen as the cliff retreated landward and would lower. Increased cliff erosion would provide a slightly greater supply of sediment to the coastal system. The material released from these cliffs and via erosion of the wave-cut platform, would be trapped within the local pocket beaches, before being transported east by longshore drift.	Cliff erosion and widening and lowering of the wave-cut platform would be expected to continue, possibly at a faster rate due to sea level rise. Cliff erosion and wave-cut platform lowering would provide a slightly greater supply of sediment to the coastal system. The coastline would be expected to retreat landward parallel to its present alignment, except at Portobello outfall. The clifftop could retreat 50m by 2105. Pockets of sediment would be expected to remain in the coves in the cliffs, similar to some parts of the present frontage, and west of the Portobello outfall promontory. The low volume of beach material along this frontage would limit longshore transport of sediment to the east.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Telscombe Cliffs			
	to lower at a rate similar to that which has taken place in the past. This area would not be expected to retreat significantly and might form a small promontory, trapping sediment on its western side. Sediment released by the cliff erosion and wave-cut platform lowering would be available for transport eastwards by longshore drift and for local pocket beaches.		
Filter 2 Policy B	**Hold the Line**	**Hold the Line**	**Managed Realignment**
	It is assumed that the concrete seawall and groynes protecting Portobello outfall would remain. Otherwise, there are no defences.	The concrete seawall and groynes that protect Portabello outfall will need maintaining and upgrading. Otherwise, there are no defences.	Allow existing defences to fail and cliffs to retreat. Implement relocation of services and infrastructure.
	The unprotected cliffs would continue to erode, due to both marine erosion and sub-aerial weathering processes, including: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden	Increased rainfall due to climate change would increase the rate of cliff top erosion, whilst sea level rise would increase the rate of cliff toe erosion along the frontage. 30m of clifftop retreat could occur by 2055, except at Portobello outfall, which would not be expected to experience significant erosion. Here, the seawall and groynes would require maintenance and an upgrading as sea levels rise and overtopping increases. The wave-cut platform would widen as the cliff	The beach would narrow and steepen, and eventually be lost as sea levels rise. Failure of the revetment and seawall would follow as exposure conditions increase. The cliffs would erode and the wave-cut platform would widen as the cliffs retreat inland. The cliffs, previously fixed in position by defences, could erode at a slightly faster rate than the adjacent coastline, as they realign themselves. Clifftop erosion (marine and

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Telscombe Cliffs			
	sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) Clifftop retreat of 10m would be expected by 2025, except in the protected outfall area. It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The wave-cut platforms would continue to lower at a rate similar to that which has taken place in the past. This area would not be expected to retreat significantly and might form a small promontory, trapping sediment on its western side. Sediment released by the cliff erosion and wave-cut platform lowering would be available for transport eastwards by longshore drift and for local pocket beaches.	retreated landward and would lower. Increased cliff erosion would provide a slightly greater supply of sediment to the coastal system. The material released from these cliffs and via erosion of the wave-cut platform, would be trapped within the local pocket beaches, before being transported east by longshore drift.	subaerial) of 25m could be possible by 2105. Pockets of sediment would be trapped within the small coves formed in the cliffs. Any properties/built assets at risk would be relocated to a more landwards location, away from the 100 year risk zone.
Filter 2 Policy C	**Hold the Line**	**Managed Realignment**	**Managed Realignment**
	It is assumed that the concrete seawall and groynes protecting Portobello outfall would remain.	Allow groynes to fail, with re-routing of infrastructure required. Some cliff stabilisation/ monitoring may be required to slow erosion.	Some cliff stabilisation/ monitoring may be required to slow erosion.
	The unprotected cliffs would continue to	The cliffs and cliff top would continue to	Cliff erosion and widening and lowering of

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Telscombe Cliffs			
	erode, due to both marine erosion and sub-aerial weathering processes, including: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) Clifftop retreat of 10m would be expected by 2025, except in the protected outfall area. It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The wave-cut platforms would continue to lower at a rate similar to that which has taken place in the past. This area would not be expected to retreat significantly and might form a small promontory, trapping sediment on its western side. Sediment released by the cliff erosion and	retreat landwards. Failure of the defences around the outfall would allow the promontory to erode and a linear coastline would form. Portobello outfall and the associated pipes would have to be realigned landwards with the cliffs. Pocket beaches would form within the cliffs, temporally trapping material being moved alongshore. Climate change, responsible for increased rainfall and sea level rise, would result in an increased in the rate of cliffs erosion along the frontage. The wave-cut platform would widen as the cliff retreated landward and would lower. 15m of clifftop retreat, due to both marine and subaerial erosion could occur by 2055. Increased cliff erosion would provide a slightly greater supply of sediment to the coastal system.	the wave-cut platform would be expected to continue, possibly at a faster rate due to increased rainfall and sea level rise. The coastline would be expected to retreat landward parallel to its present alignment. Pocket beaches would become more developed, trapping material being moved alongshore. The clifftop could retreat 25m by 2105 due to marine and subaerial erosion. Some cliff stabilisation/ monitoring may be required to slow erosion, to prevent cut-back alongside the adjacent cliffs. Cliff erosion and wave-cut platform lowering would provide a slightly greater supply of sediment to the coastal system. Pockets of sediment would be expected to remain in the coves in the cliffs, leaving a low net volume of material available for longshore transport to the east. Any properties/built assets at risk would be relocated to a more landwards location, away from the 100 year risk zone.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Telscombe Cliffs			
	wave-cut platform lowering would be available for transport eastwards by longshore drift and for local pocket beaches.		
Filter 2 Policy C	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	The concrete seawall and groynes protecting Portobello outfall would be allowed to fail. Otherwise, there are no defences.	No defences.	No defences.
	The unprotected cliffs would continue to erode and the wave-cut platforms would continue to lower at a rate similar to that which has taken place in the past. Cliff retreat of 10m would be expected by 2025. The defences around the outfall are not likely to fail until the end of this period, therefore these cliffs are not be expected to retreat significantly and might form a small promontory, trapping sediment on its western side. Sediment released by the cliff erosion and wave-cut platform lowering would be available for transport eastwards by longshore drift and for local pocket beaches.	The cliffs would continue to retreat landwards. Failure of the defences around the outfall would allow the promontory to erode at a slightly faster rate than those cliffs adjacent as a linear coastline forms. Portobello outfall and the associated pipes would be subject to breaching, being lost to the sea. This would have severe environmental and socio-economic impacts. Pocket beaches would form within the cliffs, temporally trapping material being moved alongshore. Sea level rise would increase the rate of cliff erosion along the frontage. The wave-cut platform would widen as the cliff retreated landward and would lower. 15m of clifftop retreat, due to both marine and subaerial	Cliff erosion and widening and lowering of the wave-cut platform would be expected to continue, possibly at a faster rate due to sea level rise. The coastline would be expected to retreat landward parallel to its present alignment. Pocket beaches would become more developed, trapping material being moved alongshore. The clifftop could retreat 25m by 2105 due to marine and subaerial erosion. Some cliff stabilisation/ monitoring may be required to slow erosion, to prevent cut-back alongside the adjacent cliffs. Cliff erosion and wave-cut platform lowering would provide a slightly greater supply of sediment to the coastal system. Pockets of sediment would be expected to remain in the coves in the cliffs, leaving a low net volume of material available for longshore transport

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Telscombe Cliffs			
		erosion could occur by 2055. Increased cliff erosion would provide a slightly greater supply of sediment to the coastal system.	to the east.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	No natural set back position.	No natural set back position.	No natural set back position.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven (south of leisure centre; OS Reference 1: 50,000 TV413007)			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The concrete seawall and concrete groynes would remain with diminishing standards of service. Maintenance and upgrading would be necessary.		Maintain and upgrade existing seawall.
	The seawall would fix the landward limit of the shoreline, and the clifftop, protected by the seawall, would not be expected to retreat significantly by 2025. Cliffs protected by the seawall at their base, will retreat at a slower rate, although they will have a tendency to degrade back at a shallow angle due to the effects of cliff top erosion. Cliff top erosion is driven by sub-aerial weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides)	The seawall would continue to fix the landward limit of the shoreline. No significant clifftop erosion due to marine erosion would be expected provided that the seawall was upgraded and maintained as required. There may be some additional cutback adjacent to the seawall as the downdrift section of coastline retreats. Cliff top erosion however, would continue through sub-aerial weathering process and it is expected that the occurrence of cliff top retreat would occur as rainfall increases with climate change. Along the entire frontage, the wave-cut platform seaward of the seawall would lower, exposing the seawall to increased wave attack and potentially threatening the structure's foundations. Upgrading and increased maintenance would be necessary to preserve the integrity and function of the seawall. The beaches would continue to narrow, steepen and lower with ongoing sea level	Upgrading and an increased commitment to maintenance of the seawall would be required to prevent its failure from increased wave attack and undermining. It is possible that, during this period, it would not longer be technically feasible to maintain or sustain/upgrade the defences due to the greater wave attack and sea level rise. The seawall, assuming that it is upgraded and maintained, would continue to hold the shoreline position and protect the cliffs from wave attack. Further cut-back would take place adjacent to the seawall, with continued lowering of the wave-cut platform. No significant clifftop erosion due to marine erosion, would therefore be expected, however cliff top erosion would continue through sub-aerial weathering process, with rates increasing throughout this period as the amount of rainfall increases with climate change. Sediment supply would be limited, sourced

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven (south of leisure centre; OS Reference 1: 50,000 TV413007)			
	It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. There may be some cutback east of the seawall as the downdrift section of coastline retreats. Outflanking would be unlikely due to the high elevation of the cliffs behind. The existing beaches would begin to steepen, narrow and lower. The eroding beaches would provide limited sediment input into the coastal system, supplementing that supplied from Telscombe Cliffs and erosion of the wave-cut platform. This material would progressively be moved eastwards by longshore transport, with some being temporarily trapped by groynes as it moved along the coast.	rise. It is expected that during this period, these beaches would be lost and the shoreline would lie at the foot of the seawall. The groynes in these areas would therefore become redundant. Sediment supply to the frontage would reduce, as beaches are lost during this period.	by the erosion of Telscombe Cliffs and the associated wave-cut platform lowering, in addition to in-situ erosion of the cliffs along this coastline.
Filter 2 Policy B	**Hold the Line**	**Hold the Line**	**Managed Realignment**
	The concrete seawall and concrete groynes would remain with diminishing standards of service. Maintenance and upgrading would be necessary.		Allow existing defences to fail and cliffs to retreat. Implement relocation of services and infrastructure.
	The seawall would fix the landward limit of the shoreline, and the clifftop, protected by	The seawall would continue to fix the landward limit of the shoreline. No significant	The beach would narrow and steepen, and eventually be lost as sea levels rise. Failure

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven (south of leisure centre; OS Reference 1: 50,000 TV413007)			
	the seawall, would not be expected to retreat significantly by 2025. Cliffs protected by the seawall at their base, will retreat at a slower rate, although they will have a tendency to degrade back at a shallow angle due to the effects of cliff top erosion. Cliff top erosion is driven by sub-aerial weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time.	clifftop erosion due to marine erosion would be expected provided that the seawall was upgraded and maintained as required. There may be some additional cutback adjacent to the seawall as the downdrift section of coastline retreats. Cliff top erosion however, would continue through sub-aerial weathering process and it is expected that the occurrence of cliff top retreat would occur as rainfall increases with climate change. Along the entire frontage, the wave-cut platform seaward of the seawall would lower, exposing the seawall to increased wave attack and potentially threatening the structure's foundations. Upgrading and increased maintenance would be necessary to preserve the integrity and function of the seawall. The beaches would continue to narrow, steepen and lower with ongoing sea level rise. It is expected that during this period, these beaches would be lost and the shoreline would lie at the foot of the seawall. The groynes in these areas would therefore become redundant. Sediment supply to the frontage would	of the revetment and seawall would follow as exposure conditions increase. The cliffs would erode and the wave-cut platform would widen as the cliffs retreat inland. The cliffs previously fixed in position by defences, could erode at a slightly faster rate than the adjacent coastline, as they realign themselves. Pockets of sediment would be trapped within the small coves formed in the cliffs. Clifftop erosion of 20m due to both marine and sub-aerial erosion could be possible by 2105. Any properties/built assets at risk will be relocated to a more landwards location, away from the 100 year risk zone.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven (south of leisure centre; OS Reference 1: 50,000 TV413007)			
	There may be some cutback east of the seawall as the downdrift section of coastline retreats. Outflanking would be unlikely due to the high elevation of the cliffs behind. The existing beaches would begin to steepen, narrow and lower. The eroding beaches would provide limited sediment input into the coastal system, supplementing that supplied from Telscombe Cliffs and erosion of the wave-cut platform. This material would progressively be moved eastwards by longshore transport, with some being temporarily trapped by groynes as it moved along the coast.	reduce, as beaches are lost during this period.	
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Not technically feasible.	Not technically feasible.	Not technically feasible.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	No opportunity to allow natural processes, without compromising assets or landscape quality.	No opportunity to allow natural processes, without compromising assets or landscape quality.	No opportunity to allow natural processes, without compromising assets or landscape quality.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven Heights to Newhaven Harbour			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	No defences along the length of this frontage. Newhaven Harbour west pier and breakwater (eastern end of the frontage) would remain. Harbour entrance dredging would continue.	New defences will be required to reduce/prevent the amount of cliff erosion, where the properties and assets to the west of Newhaven Harbour are at risk of being lost to the sea. Newhaven Harbour west pier and breakwater (eastern end of the frontage) would remain. Harbour entrance dredging would continue.	Maintain and upgrade new defences at (OS Reference 1:50,000 TV449999). Newhaven Harbour west pier and breakwater (eastern end of the frontage) would remain. Harbour entrance dredging would continue.
	Where the cliffs are not fronted by a beach, they would continue to erode and the wave-cut platforms would continue to lower at a rate similar to that which has taken place in the past. Clifftop retreat of 10m, due to both marine erosion and sub-aerial weathering, could occur by 2025 for these western cliffs. The sub-aerial weathering processes which drive cliff top erosion along this frontage includes: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure;	Increased rainfall and rise in sea levels due to climate change would increase the rate of cliff erosion to the west of this frontage. The wave-cut platform would widen as the cliff retreated landward and would lower. 30m of clifftop retreat on the western cliffs could occur by 2055. Increased cliff erosion in the west would provide a slightly greater supply of sediment to be transported east, ultimately adding to the volume of beach material trapped by the harbour breakwater. There is a small section of cliffs that is undefended, but not fronted by beach (OS Reference: TV443998). Erosion of these	Widening and lowering of the wave-cut platform would be expected to continue. This would provide a slightly greater supply of sediment to the coastal system. Material eroded from the cliffs will be trapped within pocket beaches, or transported to the east where it would become trapped by Newhaven Breakwater. Maintenance and upgrading of the defences at (OS Reference: TV449999), will be required to protect against increased wave attack and sea level rise. The harbour pier and breakwater would be expected to require upgrading and greater

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven Heights to Newhaven Harbour			
	• Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The cliffs to the east of this section would erode at slower rate, protected to some degree from erosion by the sand and shingle beach that exists to the west of the harbour breakwater. Sediment released by the cliff erosion and wave-cut platform lowering would be trapped within local pocket beaches or transported eastwards by longshore drift, where it would become trapped by the harbour breakwater. The beach at Harbour Heights is currently accreting and will continue to do so throughout this period on the provision that the rate of sediment accretion exceeds the rate of beach narrowing, steepening and lowering that would be induced by sea level	cliffs would be in the region of 30m, threatening the integrity of the assets that line the cliff top. In order to protect these assets, construction of new defences would be required; however cliff toe erosion through sub-aerial process would be expected to continue to take place. By the end of this period, it is expected that sea level rise would partly offset the rate of accretion, such that the beaches would begin to narrow and steepen during this period. The eastern beach would be expected to continue to protect some of the eastern cliffs from direct wave attack. The Drive/Court Farm Rd (OS Reference: TV443998) area could retreat by 30m but no significant erosion of the eastern cliffs would be expected to occur. Harbour entrance dredging would continue and the material used to provide an important supply of recycled sediment to areas east of the frontage (Seaford).	maintenance with sea level rise. Provided that this was undertaken, the structures would continue to hold the position of the harbour entrance and trap sediment on the beach at the eastern end of this frontage. The beach would continue to narrow and steepen as sea levels rise. As a result, the eastern cliffs would be exposed to increased marine erosion and it is expected that, by 2105, The Drive/Court Farm Rd (OS Reference: TV443998) clifftop could retreat by 50m. Harbour entrance dredging would continue and the material would be used to provide an important supply of sediment to the beach to the east (at Seaford).

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven Heights to Newhaven Harbour			
	rise. The harbour entrance would not be expected to alter from its present condition and location. Harbour entrance dredging (and renourishment of Seaford Beach, refer to next frontage) would artificially transport sediment eastward past the breakwater.		
Filter 2 Policy B	**No Active Intervention**	**Managed Realignment**	**Managed Realignment**
	No defences to the west of the frontage. Newhaven Harbour west pier and breakwater (eastern end of the frontage) would remain. Harbour entrance dredging would continue.	Harbour entrance training walls and breakwater will still encourage retention of beach. Cliff works and defences may be required to slow erosion at Harbour Heights (Drive/Court Farm Rd, OS Reference: TV443998) and protect cliff top assets at the latter part of this epoch.	Maintain harbour entrance training walls and breakwater. Natural accretion of beach. Maintain, and if necessary upgrade cliff works and defences constructed at Harbour Heights.
	No active intervention would be implemented during this epoch, but the coastal processes that result would not be of any difference to a hold the line policy. Where the cliffs are not fronted by a beach, they would continue to erode and the wave-cut platforms would continue to lower at a rate similar to that which has taken place in the past. Clifftop retreat of 10m, due to both marine erosion and sub-aerial weathering,	Sea level rise would increase the rate of cliff erosion to the west of this frontage. The wave-cut platform would widen as the cliff retreated landward and would lower. 25m of clifftop retreat on the western cliffs could occur by 2055. Increased cliff erosion in the west would provide a slightly greater supply of sediment to be transported east, ultimately adding to the volume of beach material trapped by the harbour breakwater.	Widening and lowering of the wave-cut platform would be expected to continue, possibly at a faster rate due to sea level rise. This would provide a slightly greater supply of sediment to the coastal system. Material eroded from the cliffs would be trapped within pocket beaches, or transported to the east where it would become trapped by Newhaven Breakwater. Maintenance and upgrading of the defences

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven Heights to Newhaven Harbour			
	could occur by 2025 for these cliffs. The sub-aerial weathering processes which drive cliff top erosion along this frontage includes: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a time. The cliffs to the east of this section would erode at slower rate, protected to some degree from erosion by the sand and shingle beach that exists to the west of the harbour breakwater. Sediment released by the cliff erosion and wave-cut platform lowering would be trapped within local pocket beaches or transported	There is a small section of cliffs at Harbour Heights (Drive/Court Farm Rd, OS Reference: TV443998) that is undefended, but not fronted by beach. Erosion of these cliffs would be in the region of 25m, threatening the integrity of the assets that line the cliff top. By the end of this period, these are likely to be lost. By the end of this period, it is expected that sea level rise would partly offset the rate of accretion, such that the beaches would begin to narrow and steepen. The eastern beach would be expected to continue to protect some of the eastern cliffs from direct wave attack. The Drive/Court Farm Rd area could retreat by 25m but no significant erosion of the eastern cliffs would be expected to occur. Harbour entrance dredging would continue and the material used to provide an important supply of recycled sediment to areas east of the frontage (Seaford).	at Harbour Heights would be required to protect against increased wave attack and sea level rise. The harbour pier and breakwater would be expected to require upgrading and greater maintenance with sea level rise. Provided that this was undertaken, the structures would continue to hold the position of the harbour entrance and trap sediment on the beach at the eastern end of this frontage. The beach would continue to narrow and steepen as sea levels rise. As a result the eastern cliffs would be exposed to increased marine erosion and it is expected that, by 2105, the clifftop at Drive/Court Farm Rd could retreat by 50m. Harbour entrance dredging would continue and the material would be used to provide an important supply of sediment to the beach to the east (at Seaford).

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Peacehaven Heights to Newhaven Harbour			
	eastwards by longshore drift, where it would become trapped by the harbour breakwater. The beach at Harbour Heights is currently accreting and will continue to do so throughout this period on the provision that the rate of sediment accretion exceeds the rate of beach narrowing, steepening and lowering, that would be induced by sea level rise. The harbour entrance would not be expected to alter from its present condition and location. Harbour entrance dredging (and renourishment of Seaford Beach, refer to next frontage) would artificially transport sediment eastward past the breakwater.		
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Newhaven Harbour			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	Maintain seawall and breakwaters. Dredging of the Harbour would continue. Recycling of dredged material to Seaford would continue. (The placement of this material will ultimately depend on the policy at Seaford). Any policy adopted along this frontage should take account of the Ouse Relief Scheme, currently being investigated by the Environment Agency.	Maintain seawall and breakwaters. Dredging of the Harbour would continue. Recycling of dredged material to Seaford would continue. (The placement of this material will ultimately depend on the policy at Seaford). Any policy adopted along this frontage should take account of the Ouse Relief Scheme, currently being investigated by the Environment Agency.	Maintain seawall and breakwaters. Dredging of the Harbour would continue. Recycling of dredged material to Seaford would continue. (The placement of this material will ultimately depend on the policy at Seaford). Any policy adopted along this frontage should take account of the Ouse Relief Scheme, currently being investigated by the Environment Agency.
	The seawall and breakwaters would fix the present position of the harbour mouth. This frontage would still be lacking a protective foreshore, and the seawall and breakwaters would be subject to increased wave attack as sea levels rise. Sediment supply to the coastline would be limited by the continued presence of the harbour arm, although recycling of dredged material from the harbour channel would provide a source of material to the beaches at Seaford.	The seawall and breakwaters would fix the present position of the harbour mouth. This frontage would still be lacking a protective foreshore, and the seawall and breakwaters would be subject to increased wave attack as sea levels rise. The breakwaters would require maintenance throughout the period to mitigate against their failure. Cutback would take place on the downdrift side of the breakwater at Seaford, although the placement of recycled material would help to reduce this. Sediment supply to the coastline would be limited by the continued presence of the harbour arm, although recycling of dredged	The seawall and breakwaters would fix the present position of the harbour mouth. This frontage would still be lacking a protective foreshore, and the seawall and breakwaters would be subject to increased wave attack as sea levels rise. Sediment supply to the coastline would be limited by the continued presence of the harbour arm, although recycling of dredged material would provide a source of material to the beaches at Seaford. It is expected that the likelihood of cutback on the downdrift side of the harbour would take place as sea level rise offsets the benefits of sediment recycling.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Newhaven Harbour			
		material would provide a source of material to the beaches at Seaford.	
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Newhaven Harbour to Seaford (Tide Mills)			
Filter 2 Policy A	**No Active Intervention**	**Hold the line**	**Hold the line**
	No defences.	No defences, however coastal management to some degree will be required in order to hold the line. This could be done by extending the existing recycling/beach management scheme that is carried out at Seaford (Seaford Beach Scheme), to the west by placing renourishment material along this frontage.	Renourishment practices may need to be complemented with hard linear defences during this period.
	The shoreline would remain in its present position. The beaches would narrow, steepen and roll back as sea levels rise. There would be increased overtopping of the beaches during storms, but in general there would be little change from the existing beach condition.	The shoreline would retreat landwards and the beaches will be under increased pressure to roll back as sea levels rise. Renourishment of the beaches would help to retain their volume and prevent them from narrowing and steepening. This would also help to ensure there is little change to the existing sediment inputs to the coastal system.	The shoreline would retreat and the beaches will rollback, narrow and steepen as sea levels rise. Beach renourishment would no longer be technically feasible and a new method of defence would be required to maintain a hold the line policy along this frontage.
Filter 2 Policy B	**No Active Intervention**	**Managed Realignment**	**Managed Realignment**
	No defences.	No defences. Secondary embankments required. Environmental enhancement by flooding of lagoon behind existing beach.	No defences. Maintain and upgrade secondary defences. Environmental enhancement by flooding of lagoon behind existing beach.

	The shoreline would remain in its present position. The beaches would narrow, steepen and roll back as sea levels rise. There would be increased overtopping of the beaches during storms, but in general there would be little change from the existing beach condition.	The shoreline will retreat and the beaches will narrow, steepen as sediment supplies diminish and roll back as sea levels rise.. The beaches will be subject to increased overtopping and more frequent breaching throughout this period. Breaching of the beach would result in a connection of the lagoon behind (Vanguard Way) to the sea, which would provide a potential area for intertidal habitat formation. Secondary embankments would be required to control the amount of flooding, this preventing inundation of the hinterland.	The beach will continue to retreat, which could be by as much as 330m by 2105, breach, and by this period will have broken down. There is potential for the formation of an embayment, held at its western end by the training wall at Newhaven Harbour and the defences/hold the line policy at Seaford. Continued inundation of the embayment would enable the evolution of intertidal habitat. It is expected that the saltmarsh would attempt to translate landwards as sea levels rise. In doing so, it would be squeezed against the secondary defences, resulting in the loss of habitat. The secondary defences would require increased maintenance and upgrading as sea levels rise, at the cost of coastal squeeze and intertidal habitat.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Environmental enhancement by flooding of lagoon behind existing beach.	Environmental enhancement by flooding of lagoon behind existing beach.	Environmental enhancement by flooding of lagoon behind existing beach.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Seaford			
Filter 2	**Hold the line**	**Hold the Line**	**Hold the Line**
	Maintain the seawall, short stretch of old concrete wall in the east (and concrete block armouring which covers it and the timber breastwork that fronts it). The timber groyne is now buried. Maintain the Splash Point groyne (steel sheet piled) close to the eastern end of the unit, and the rubble revetment which helps to reduce cutback on the downdrift side of the splash point groynes. The old concrete surrounded outfall (now disused), which acts to hinder longshore transport, would also remain. Renourishment of Seaford Beach (Seaford Beach Scheme- using material dredged from Newhaven Harbour) would continue.	The seawall, old concrete wall with rock armouring, timber groyne, splash point groyne and downdrift rubble revetment would remain. Renourishment of Seaford Beach (using material dredged from Newhaven Harbour) would continue.	The seawall, old concrete wall with rock armouring, timber groyne, splash point groyne and downdrift rubble revetment would remain, although they may require increased maintenance throughout this period. Renourishment of Seaford Beach (using material dredged from Newhaven Harbour) would continue.
	Most of the frontage is backed by seawall/ breastwork/ armouring. These structures would fix the landward limit of the beach. Renourishment (using sediment dredged from the harbour entrance) would maintain the beach in its present condition. The frontage would continue to act as a closed sediment cell. Erosion of the renourishment material would provide limited	The landward limit of the beach would continue to be fixed by the sea defence structures. Sediment would continue to be trapped at the western and eastern ends of the beach by the pier, groyne and outfall structures. The rubble revetment would reduce cutback of the cliffs adjacent to the Splash Point groynes. The beaches may begin to narrow and	The beaches would narrow and steepen as sea levels rise and increased renourishment would be required to prevent beach loss and groyne redundancy. The groynes would therefore be expected to require upgrading and greater maintenance with sea level rise. The rubble revetment would reduce cutback of the cliffs adjacent to the Splash Point groynes. There will be an increased threat of flooding as sea levels rise, with potential for

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Seaford			
	sediment input into the coastal system. This material would be moved eastwards by longshore transport and trapped by the eastern groynes and outfall at Seaford. Some material would also be moved westwards by a local drift reversal, back towards the harbour entrance, where the harbour pier would trap it. Cutback of cliffs adjacent to terminal groyne at Seaford Head would continue, although the rubble revetment on the downdrift side of the Splash Point groyne would reduce the rate at which this takes place.	steepen as sea levels rise and they become squeezed against the sea defences behind, particularly in the central section of the frontage. Increased renourishment would be required in order to maintain the beach's condition.	breaching. Provided that this was undertaken, the structures would continue to trap sediment at the ends of the frontage. Recycling of this material to the centre of the frontage could be used to supplement renourishment, as the renourishment requirements increased, although this may be technically unsustainable by year 100.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.	There are no benefits to this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Little opportunity as properties back onto beach. 1.	Little opportunity as properties back onto beach.	Little opportunity as properties back onto beach.
Filter 2	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	Little opportunity as properties back onto beach. Loss of 0 properties would occur.	Little opportunity as properties back onto beach. Loss of up to 55 properties would occur.	Little opportunity as properties back onto beach. Loss of up to 90 properties could occur.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Seaford Head			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	No benefits gained.	No benefits gained.	Properties adjacent to Cuckmere Haven would be at risk by this epoch. Cliff stabilisation work, or cliff toe defence, e.g. breastwork would be required.
			By implementing cliff stabilisation work, or cliff toe defence works, the rate of cliff erosion would effectively be slowed. This would not have a significant impact on the existing coastal processes as the input and throughput of sediment along this coastline is minimal.
Filter 2 Policy B	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	The gabions at Hope Gap would remain for the duration of this epoch. There are no other defences.	No defences. Properties would be at risk.	
	The unprotected cliffs would continue to erode and the wave-cut platforms would continue to lower at a rate similar to that which has taken place in the past. Clifftop retreat of up to 10m could take place by 2025. The gabions at Hope Gap would protect the	The gabions would fail at the beginning of this period, the promontory would retreat and be lost and any material previously trapped would be released to be transported downdrift. Sea level rise would increase the rate of cliff erosion along the entire frontage. The wave-	Cliff erosion and widening and lowering of the wave-cut platform would be expected to continue. Up to 30m of clifftop retreat could occur by 2105. Pockets of sediment would be expected to remain in the coves in the cliffs, similar to some parts of the present frontage. The coastline position would be

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Seaford Head			
	cliff behind them from wave attack and no significant clifftop retreat would be expected in this area. A small promontory would form against the adjacent coastline, trapping sediment transported to the east by alongshore drift. The eastern groynes and outfall at Seaford would trap the majority of material that could potentially be supplied to this coastline, hence little sediment is supplied from updrift. Sediment released by the cliff erosion and wave-cut platform lowering would be available for local pocket beaches and transport eastwards by longshore drift.	cut platform would widen as the cliff retreated inland, but would be subject to platform lowering. The clifftop could retreat by 15m by 2055. Sediment released by the cliff erosion and wave-cut platform lowering would mainly be transported eastwards by longshore drift, but some would be expected to remain as pockets of sediment trapped in small coves.	expected to erode parallel to its present alignment. Sediment released by the cliff erosion and wave-cut platform lowering would mainly be transported eastwards by longshore drift, but some would be expected to remain as pockets of sediment trapped in small coves.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.
Filter 2	**Managed Realignment**	**Managed Realignment**	**Managed Realignment**
	Technically inappropriate.	Technically inappropriate.	Technically inappropriate.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cuckmere Haven and Cuckmere Valley			
The policies tested here are based on assumptions of management practices, and should not pre-judge planning applications submitted for the future management of Cuckmere Haven. Instead the Shoreline Management Plan should focus on managing the coastline along this frontage only.			
Filter 2 Policy A	**Hold the Line**	**Hold the Line**	**Hold the Line**
	The concrete revetment, timber groynes and concrete seawall (west side of entrance) would remain. Continued maintenance of the flood banks in the tidal part of the channel would be required. The training walls at the river mouth would remain. Sediment recycling from the harbour entrance would continue.	The concrete revetment, timber groynes and concrete seawall (west side of entrance) would remain. Continued maintenance and upgrading of the flood banks in the tidal part of the channel would be required to account for sea level rise. Increased maintenance and upgrading of the defences would be required. The training walls at the river mouth would remain. Sediment recycling from the harbour entrance would continue.	The concrete revetment, timber groynes and concrete seawall (west side of entrance) would remain. Continued maintenance and upgrading of the defences and flood banks would be required as sea levels rise. Increased renourishment will be needed to prevent groyne redundancy. The training walls at the river mouth would remain. Sediment recycling from the harbour entrance would continue.
	The condition and location of the harbour entrance, low cliffs and beaches would be expected to remain similar to their present state, i.e. accreting. A limited supply of sediment would be supplied from the Seaford cliffs and recycled from the channel entrance, which would maintain the beaches. This sediment would also be available for longshore transport eastwards, although the natural embayment	Careful beach management would be necessary to maintain the beaches and clear the harbour entrance. Without this, the beaches would be expected to begin to narrow, steepen and retreat landwards. Increased overtopping and breaching of the shingle spits would be expected as sea levels rise.	An increased commitment to beach management and maintenance/upgrading of the revetment, seawall groynes and training walls would be required due to increasing sea levels. Provided that this was forthcoming, the location and condition of the frontage would remain stable. Sediment from the beaches on the frontage would continue to be available for transport eastwards.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cuckmere Haven and Cuckmere Valley			
	form of this coastline will mean that the majority of material is retained in the immediate frontage.		
Filter 2 Policy B	**Managed Realignment (as per Environment Agency Management Strategy)**	**Managed Realignment (as per Environment Agency Management Strategy)**	**Managed Realignment (as per Environment Agency Management Strategy)**
	Managed realignment on both sides of the valley through breach(s) in both sides of the channel floodwall, with the possible reconnection of meanders. The intertidal habitat will be opened to inundation by the sea and new habitat will be established. There is scope for the removal / relocation of groynes and training wall.	This is dependant on the findings of the feasibility study currently being undertaken by the Environment Agency and resulting from that, the methodology adopted. The aim of the management plan is to create a self-sustaining system.	This is dependant on the findings of the feasibility study currently being undertaken by the Environment Agency and resulting from that, the methodology adopted. The aim of the management plan is to create a self-sustaining system.
	Due to the very limited supply of material from longshore drift it may be more sustainable to let the west beach become swash aligned rather than continuing to pin it in the current drift aligned state. Possible removal / relocation of groynes and training wall. The timing of events would be controlled, but would not strictly adhere to the epochs defined by this SMP. New inter-tidal habitat would be established, although there is a potential risk of flooding	The river and valley would return to a more naturally functioning system, with unconstrained meanders and a continuing development of inter-tidal habitat. There would be a continued potential risk of flooding updrift and up river.	Inter-tidal habitat would continue to develop and the river would continue to evolve and realign itself to the driving energy gradient of stream flow. There would be a potential risk of flooding updrift and up river.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cuckmere Haven and Cuckmere Valley			
	updrift and up river. The feasibility and methodology are currently being considered and evaluated.		
Filter 2 Policy C	**Managed Realignment**	**No Active Intervention**	**No Active Intervention**
	Managed realignment on both sides of the valley through breach(s) in both sides of the channel floodwall, with the possible reconnection of meanders. The intertidal habitat will be opened to inundation by the sea and new habitat will be established. There is scope for the removal / relocation of groynes and training wall.	The flood banks would be in poor condition, if not failed. Breaching of the tidal and river channel will occur along its length.	No defences.
	Due to the very limited supply of material from longshore drift it may be more sustainable to let the west beach become swash aligned rather than continuing to pin it in the current drift aligned state. Possible removal / relocation of groynes and training wall. The timing of events would be controlled, but would not strictly adhere to the epochs defined by this SMP. New inter-tidal habitat would be established, although there is a potential risk of flooding updrift and up river. The feasibility and methodology are currently being considered	The western spit would continue to roll back as sea levels rise and continue to elongate to the east. As a result, the estuary mouth will be further deflected to the east. At the beginning of this period, breaching of the remainder of the flood banks will result in the continued development of intertidal habitat. As sea levels rise, the rate at which intertidal habitat forms will reduce, unless the rate of sedimentation can keep pace or outpace the rate of sea level rise. The creation and accretion of intertidal habitat will also be determined by the availability of	By 2105, the Cuckmere Valley will have returned to a naturally functioning system that would be closer to an equilibrium state with the existing forcing conditions. A shingle spit would extend eastwards, across the existing mouth, from the cliffs at Seaford. The Cuckmere River will, as a result, enter the sea at a point further east than its present location, but which is controlled by the Beachy Head Cliffs. A tidal delta will form at the mouth of the estuary, with the potential formation of a series of

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cuckmere Haven and Cuckmere Valley			
	and evaluated.	sediment at his location.	mobile sand banks. The tidal and river channel will be comprised of a series of meanders and tributaries, and intertidal habitat would be well established, across the flood plain of the river valley.
Filter 2 Policy D	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	The timber groynes and training walls would fail during this period. The tidal flood banks located along both sides of the channel would be eroded and begin to fail. There would be increased risk from flooding. Sediment recycling would cease.	The flood banks would be in poor condition, if not failed. Breaching of the tidal and river channel would occur along its length.	No defences.
	The beaches would be expected to begin to narrow, steepen and retreat landwards. Increased overtopping and breaching of the shingle beaches would be expected as the beaches deteriorate. A series of breaching and closures along the length of the spit. With the mouth no longer constrained by training walls/dredging, the shingle spits would be free to move to a more natural alignment. Orientation of west beach likely to change from drift to swash aligned, leading to closure of the existing estuary mouth.	The western spit would continue to roll back as sea levels rise and continue to elongate to the east. As a result, the estuary mouth would be further deflected to the east. At the beginning of this period, breaching of the remainder of the flood banks would result in the continued development of intertidal habitat. As sea levels rise, the rate at which intertidal habitat forms would reduce, unless the rate of sedimentation can keep pace or outpace the rate of sea level rise. The creation and accretion of intertidal habitat	By 2105, the Cuckmere Valley would have returned to a naturally functioning system that would be closer to an equilibrium state with the existing forcing conditions. A shingle spit would extend eastwards, across the existing mouth, from the cliffs at Seaford. The Cuckmere River would, as a result, enter the sea at a point further east than its present location, but which is controlled by the Beachy Head Cliffs. A tidal delta would form at the mouth of the estuary, with the potential formation of a series of

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cuckmere Haven and Cuckmere Valley			
	The effect of the failure of the tidal flood banks on both sides of the channel is unpredictable and dependent on location, size and timing of breaches. Intertidal habitat would be created, however it may not be of as high a quality as could be attained through a managed retreat.	would also be determined by the availability of sediment at his location.	mobile sand banks. The tidal and river channel would be comprised of a series of meanders and tributaries, and intertidal habitat would be well established, across the flood plain of the river valley.
Filter 2	**Advance the Line**	**Advance the Line**	**Advance the Line**
	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.	There are no benefits to be gained from this policy option at this location.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cuckmere Haven to Beachy Head			
Filter 1	**No Active Intervention**	**No Active Intervention**	**No Active Intervention**
	No Defences	No Defences	No Defences
	The unprotected cliffs would continue to erode and the wave-cut platforms would continue to lower at a rate similar to that which has taken place in the past. Clifftop retreat of 10m (20m at Birling Gap) could take place by 2025. Cliff top erosion is driven by sub-aerial weathering processes, which include: • Percolation of rain water through joints in the cliffs. Subsequent, freeze thaw within joints, leads to their expansion and failure; • Wedge failure along joints • Corrosion of soft chalk via salt laden sea spray ; and • Cliff face failure via avalanching (chalk cliff slides) It is important to note, that due to the nature of cliff failures, cliff top retreat can occur episodically, with up to 5-10m of retreat at a	Increased rainfall and sea level rise would increase the rate of cliff erosion along the entire frontage. The wave-cut platform would widen as the cliff retreated inland, but would be subject to platform lowering. The clifftop could retreat by 25m (40m at Birling Gap) by 2055. Sediment released by the cliff erosion and wave-cut platform lowering would mainly be transported eastwards by longshore drift, but some would be expected to remain as pockets of sediment trapped in small coves.	Cliff erosion and widening and lowering of the wave-cut platform would be expected to continue, possibly at a faster rate due to sea level rise and increased rainfall, due to climate change. The coastline position would be expected to erode parallel to its present alignment. Pockets of sediment would be expected to remain in the coves in the cliffs, similar to some parts of the present frontage. Sediment released by the cliff erosion and wave-cut platform lowering would mainly be transported eastwards by longshore drift, but some would be expected to remain as pockets of sediment trapped in small coves. 35m (70m at Birling Gap) of clifftop retreat could occur by 2105.

SCENARIO REF: Filter 1, Filter 2-optional scenarios (A, B, C, D)			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cuckmere Haven to Beachy Head			
	time. Sediment inputs into this frontage are limited, since the frontage at Cuckmere Haven is naturally accreting. Sediment released by the cliff erosion and wave-cut platform lowering would be available for local pocket beaches and transport eastwards by longshore drift.		