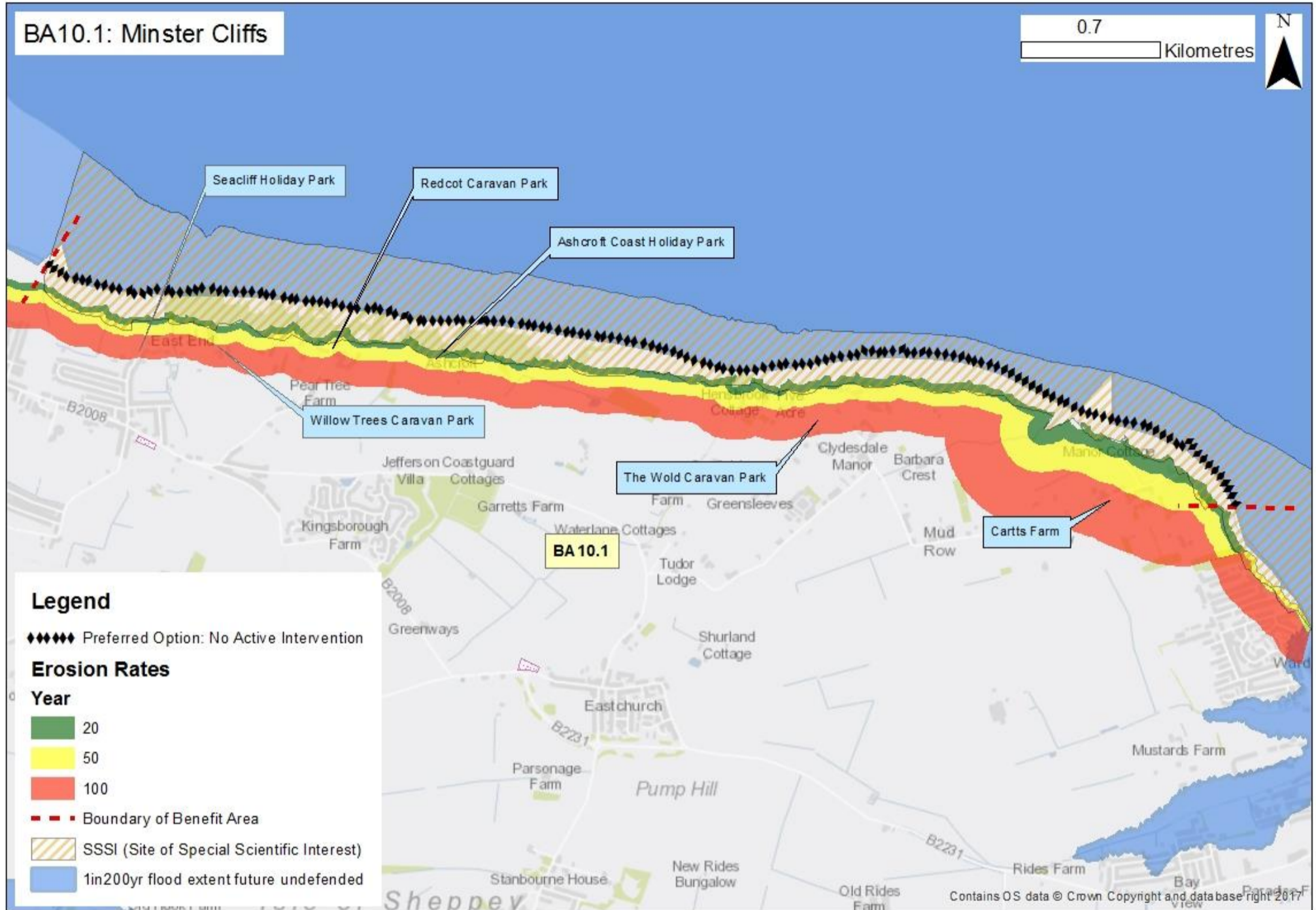


Benefit Area Name	10 - Minster Cliffs
Benefit Unit Name	10.1 - Minster Slopes
Frontage Length	6.4 km
Defence Structure Type	Undefended
Min Standard of Protection (AEP%)	Undefended
Residual Life (years)	Undefended

	0-20 years	20-50 years	50-100 years
SMP Policy	NAI	NAI	NAI
Aiming to comply with policy	Yes		
Comment	NAI for all epochs		



Do Nothing Assets at Risk (Erosion)			
	Year 20 (undefended)	Year 50 (undefended)	Year 100 (undefended)
Residential	14	54	61
Commercial & Industrial	9	61	119
Agricultural (Ha)	30.364	53.18	108.19
Key Infrastructure	None	None	None
Social and Environmental Considerations	Sheppey Cliffs and Foreshore SSSI (geology)	Sheppey Cliffs and Foreshore SSSI (geology) Redcot Caravan Park Willow Trees Caravan Park Ashcroft Coast Holiday Park	Sheppey Cliffs sand Foreshore SSSI (geology) Redcot Caravan Park Willow Trees Caravan Park Ashcroft Coast Holiday Park Seacliff Holiday Park The World Caravan Park Cartts Farm

Long List to Short List

Potential Measures

	Measures	Selected	Reasoning
Structural	Construct new embankment	N	Exclude - will not support the SMP policy and is unlikely to be eligible for FDGiA funding due to limited number of benefits
	Maintain embankment	N	Exclude- no embankments currently present
	Raise embankment (sustain)	N	Exclude- no embankments currently present
	Raise embankment (upgrade)	N	Exclude- no embankments currently present
	Construct new wall	N	Exclude - will not support the SMP policy and is unlikely to be eligible for FDGiA funding due to limited number of benefits
	Maintain wall	N	Exclude - no walls currently present
	Raise wall (sustain)	N	Exclude - no walls currently present
	Raise wall (upgrade)	N	Exclude - no walls currently present
	Maintain rock revetment	N	Exclude - no rock revetment currently present
	Construct rock revetment	N	Exclude - will not support the SMP policy and is unlikely to be eligible for FDGiA funding due to limited number of benefits
	Install demountable defences	N	Exclude - relatively costly option which is not the most efficient use of FDGiA funding compared to sustaining existing defences. It would require significant man resources to implement during a flood event. This would need to be discussed with Asset Owners at OBC stage.
	Install temporary defences	Y	Take forward - can help deliver some short term erosion protection. Currently being applied for by Minster Parish Council.
	Beach recharge (sand or shingle)	N	Exclude - the foreshore is mudflat/ saltmarsh and so technically unviable and potentially environmentally damaging in SPA habitat
	Construct rock groynes	N	Exclude - the foreshore is mudflat/ saltmarsh and so technically unviable geotechnically and would not provide flood protection function
	Maintain rock groynes	N	Exclude - to rock groynes currently present
	Construct timber structures	N	Exclude - the foreshore is mudflat/ saltmarsh. Introduction of timber structures could cause damaging impacts on the SPA habitat.
Maintain timber structures	N	Exclude - no timber structures currently present	
Construct a tidal barrier	N	Exclude - not appropriate for this location	
Non-Structural	Implement monitoring	Y	Take forwards - will support the SMP policy
	Implement flood warning system	N	Not suitable as a single measure to implement the SMP policy. May be combined with structural measures
	Land use planning	Y	Take forwards - will support the SMP policy
	Adaptation measures	Y	Take forwards - will support the SMP policy
	Development control	Y	Take forwards - will support the SMP policy
	Emergency response plans	N	Not suitable as a single measure to implement the SMP policy. May be combined with structural measures
	Monitoring for health and safety only	Y	Take forwards - will support the SMP policy

Long List of Options

	a) Do nothing	b) Monitoring only	c) Adaptation- roll back of property
To what extent does the option meet the objectives?			
1- Reduce Flood Risk	N	N	Y
2 - Natura 2000 sites	NA	NA	NA
3- Reduce maintenance	Y	Y	Y
4 - WFD	N	TBC	TBC
5 - Local Plans	Y	Y	Y
Comment and decision on whether taken forward to shortlist	Y = baseline	Y = monitoring cliff erosion for health and safety	Y = roll back of property over time

Short List of Options

a) Do nothing
b) Monitoring only
c) Adaptation- roll back of property overtime

Assessment of Short List			
Option	a) Do nothing	b) NAI - monitoring only	c) NAI - roll back of property over time
Description	Used as an economic baseline to compare the other options against.	No capital works completed but monitoring of the cliffs is undertaken for health and safety	Relocation of property away from the cliff top
Technical Issue	Undefended frontage. SSSI on the cliffs	Undefended frontage. SSSI on the cliffs	Undefended frontage. SSSI on the cliffs A detailed adaptation study is required
Assumptions/ Uncertainties	Assumes that all management is ceased.	No capital works	Assumed that there will be space available to move the properties to. Costs based on the demolition and construction of a similar property further inland.
SOP Provided (% AEP)	n/a (Erosion)	n/a (Erosion)	n/a (Erosion)
Value of Economics			
PV Capital Costs	£ -	£ -	£3,139,220 Potentially not eligible for GiA funding
PV Maintenance Costs	£ -	£ -	£ -
PV Other Costs	£ -	£ 59,625	£583,091 Potentially not eligible for GiA funding
Total Cost (including Optimism Bias) (PV)	£ -	£ 95,400	£5,995,700 Potentially not eligible for GiA funding
Value of Benefits	£ -	£ -	£ 7,729,189
Benefit Cost Ratio (BCR)	0.0	0.0	1.3
PF Score	0%	0%	32%
Further funding required to achieve 100% PF Score	£ -	£ 95,400	£ 4,048,429
Flood/ erosion impacts			
Number of Residential Properties at risk from erosion over 100 years	14	54	61
Number of Commercial properties at risk from erosion over 100 years	9	61	118
PV Value of Properties (Total including AAD, write-offs, vehicle damages and Emergency Services)	£ -	£ -	£ -
Erosion Damages	£ 7,919,754	£ 7,919,754	£ 190,565
Critical Infrastructure	No assets at risk	No assets at risk	No assets at risk
PV Value of Impacts on road and rail	-	-	-
PV Value of Tourism and Recreation Impacts	-	-	-
PV Value of Agriculture Impacts	-	-	-
Stakeholders Feedback			
Statutory Stakeholders/ SEG	SEG members believe that DN options are not suitable. There is currently a pilot scheme being proposed to extend the promenade at Minster along the undefended section of cliff. However, within this Strategy, it is considered that capital works along the frontage are not possible.	SEG members believe that DN options are not suitable. There is currently a pilot scheme being proposed to extend the promenade at Minster along the undefended section of cliff. However, within this Strategy, it is considered that capital works along the frontage are not possible.	SEG members believe that DN options are not suitable. There is currently a pilot scheme being proposed to extend the promenade at Minster along the undefended section of cliff. However, within this Strategy, it is considered that capital works along the frontage are not possible.
Landowners	Concerned about the loss of land with a DN option	Concerned about the loss of land with a DN option	Concerned about the loss of land with a DN option
Technical Feasibility			
Site Specific	n/a	n/a	n/a
Strategy Wide	n/a	n/a	n/a

WFD (Water Framework Directive)			
Compliance assessment outcome	3 Maintaining current natural processes	3 Maintaining current natural processes	3 Maintaining current natural processes
HRA (Habitats Regulation Assessment)			
Impact on SPA/ Ramsar qualifying features	3 These options are not likely to have significant effects on any Natura 2000 sites and their constituent qualifying features.	3 These options are not likely to have significant effects on any Natura 2000 sites and their constituent qualifying features.	3 These options are not likely to have significant effects on any Natura 2000 sites and their constituent qualifying features.
Impacts on freshwater habitats	3 n/a - no designated freshwater habitats in the BA	3 n/a - no designated freshwater habitats in the BA	3 n/a - no designated freshwater habitats in the BA
Impacts on intertidal habitats	3 n/a - no designated intertidal habitats in the BA	3 n/a - no designated intertidal habitats in the BA	3 n/a - no designated intertidal habitats in the BA
Habitat Connectivity	3 No impacts, either beneficial or adverse.	3 No impacts, either beneficial or adverse.	3 No impacts, either beneficial or adverse.
SEA (Strategic Environmental Assessment)			
Historic Environment	2 Some listed buildings at risk of erosion over the next 100 years.	2 Some listed buildings at risk of erosion over the next 100 years.	2 Some listed buildings at risk of erosion over the next 100 years.
Effects on population	1 Some health and safety issues from eroded cliffs, will need a roll-back contingency. Potential loss of holiday infrastructure	1 Some health and safety issues from eroded cliffs, will need a roll-back contingency. Potential loss of holiday infrastructure	1 Some health and safety issues from eroded cliffs, will need a roll-back contingency. Potential loss of holiday infrastructure
Impact on plans/ programmes	3 Benefit area does not coincide with proposed development sites	3 Benefit area does not coincide with proposed development sites	3 Benefit area does not coincide with proposed development sites
Freshwater Biodiversity	3 Negligible although the geological SSSI will be exposed to erosion over time which is in keeping with the SSSI features	3 Negligible although the geological SSSI will be exposed to erosion over time which is in keeping with the SSSI features	3 Negligible although the geological SSSI will be exposed to erosion over time which is in keeping with the SSSI features
Saline Biodiversity	3 n/a - cliffed frontage at risk of erosion, so limited saline habitats in the area.	3 n/a - cliffed frontage at risk of erosion, so limited saline habitats in the area.	3 n/a - cliffed frontage at risk of erosion, so limited saline habitats in the area.
Soil	2 Erosion of agricultural land over time. However this is required for the maintenance of the SSSI	2 Erosion of agricultural land over time. However this is required for the maintenance of the SSSI	2 Erosion of agricultural land over time. However this is required for the maintenance of the SSSI
Groundwater	3 No impacts predicted	3 No impacts predicted	3 No impacts predicted
Landscape (visual impact)	3 Gradual natural change	3 Gradual natural change	3 Gradual natural change
Carbon Storage	3 no loss or gain of carbon storage from erosion of the cliffs.	3 no loss or gain of carbon storage from erosion of the cliffs.	2 no loss or gain of carbon storage from erosion of the cliffs; but some carbon costs from construction

Ecosystem Services			
Qualitative Score from Ecosystem Services Assessment	-10	-10	-10
Comments	Degradation in some ES (e.g. food, freshwater and recreation and tourism) and no opportunities for enhancement	Degradation in some ES (e.g. food, freshwater and recreation and tourism) and no opportunities for enhancement	Degradation in some ES (e.g. food, freshwater and recreation and tourism) and no opportunities for enhancement
To what extent does the option meet the objectives?			
1- Reduce Flood Risk	N	N	N
2 - Natura 2000 sites	Y	Y	Y
3- Reduce maintenance	Y	Y	Y
4 - WFD	Y	Y	Y
5 - Local Plans	Y	Y	Y

Environmental Scores			
100 = best option, 0 = worst option			
Option	a) Do nothing	b) NAI -monitoring only	c) NAI - roll back of property over time
WFD (Water Framework Directive)			
Compliance assessment outcome	50	50	50
HRA (Habitats Regulation Assessment)			
Impact on SPA/ Ramsar qualifying features	50	50	50
Impacts on freshwater habitats	50	50	50
Impacts on intertidal habitats	50	50	50
Habitat Connectivity	50	50	50
SEA (Strategic Environmental Assessment)			
Historic Environment	25	25	25
Effects on population	0	0	0
Impact on plans/ programmes	50	50	50
Freshwater Biodiversity	50	50	50
Saline Biodiversity	50	50	50
Soil	25	25	25
Groundwater	50	50	50
Landscape (visual impact)	50	50	50
Carbon Storage	50	50	25
Total	600	600	575

Summary of Results			
Option	a) Do nothing	b) NAI -monitoring only	c) NAI - roll back of property over time
Costs	£ -	£ 95,400	£5,995,700 Potentially not eligible for GiA funding
Benefits	£ -	£ -	£ 7,729,189
NPV	£ -	-£ 95,400	£ 1,733,489
BCR	0.0	0.0	1.3
Environmental Scoring	600	600	575

Preferred Option Decision Making		
DLO	Leading Option at DLO Stage	Justification for Leading Option
DLO1 - Economic Assessment	c) No Active Intervention (NAI) with localised property adaptation (potentially not GiA funded).	This is the only option with a BCR greater than 1, however there are a significant amount of contributions required. This will help satisfy the stakeholders requests to protect the property in the area. Conversations and studies would be required to secure funding for property adaptation solutions.
DLO2 - Economic Sensitivities		
DLO3 - Review of Compensatory Intertidal Habitat Requirements		
DLO4 - Review of Compensatory Freshwater Habitat Requirements		
DLO5 - Modelling of Leading Options		
DLO6 - Consultation Phase		

Preferred Option Name
No Active Intervention (NAI) with localised property adaptation (potentially not GiA funded).

Preferred Option
This option will continue to ensure that there is no active management of the cliffs, in line with the SSSI designation. However, to help reduce the risk to people and property, costs have been included for the relocation of property away from the cliff top.

Justification
This option the only option with a BCR greater than 1, however there are a significant amount of contributions required. It also supports the implementation of Swale Borough Council's coastal change management plan.

Preferred Option Costs				
	Cost	Benefits	BCR	PF Score
	£ 5,955,700	£ 7,729,189	1.3	20%