Whitehaven to Workington (11e 2)

Recommendations:

Overview:

The towns of Workington and Whitehaven are key regional centres and therefore, continued flood and erosion risk management to these towns forms the basis of the long term SMP vision for this area.

Assuming the railway is going to remain operational then the long term plan will be to maintain it in its current position and continue to afford defence to it. However, if the railway does not remain, then the long term plan would be to not continue to maintain those defences. However, even walking away would not enable a 'naturally' functioning coast as the debris from existing structures would take decades to disperse. Some localised defences may be permissible therefore eg at Harrington Parks, however, neither long term approach will be compromised by a short term (present day) policy to continue maintaining existing defences.

Localised policies at Harrington Parks, The Howe and south of Workington Harbour will provide some sediment input, from cliff erosion, to local beaches and adjacent frontages. The SMP policies manage risks to existing commercial, residential and community assets thus achieving the social objectives, whilst the environmental objectives can be addressed by allowing the areas of natural coast, and disused industrial areas, to erode to facilitate localised natural roll-back of the shoreline and provide sediment to neighbouring frontages, unless the erosion poses a contamination risk.

Location (Policy Unit)		**Policy and Approach (from 2010)**			**Justification**		
		0-20 years	**20-50 years**	**50-100 years**	**Social**	**Environmental**	**Economic**
2:1	**Whitehaven Harbour and north beach**	***Hold the Line –*** By maintaining harbour walls and gates - assumes harbour remains operational, maintain / extend rock revetment to railway.	***Hold the Line –*** By maintaining / upgrading harbour defences, harbour gates and rock revetment– assumes harbour remains operational.	***Hold the Line –*** By maintaining / upgrading harbour defences, harbour gates and rock revetment – assumes harbour remains operational.	Maintains the integrity of the town and port.	Manages risk to Scheduled Monuments (the Quay and Lighthouse). No adverse impacts on designated sites through holding the line.	The economic viability of the policy may depend on heritage, tourism and amenity values. (See Note 1 below).
2:2	**Bransty to Parton**	***Hold the Line –*** By maintaining / upgrading railway defences.	***Hold the Line –*** By maintaining / upgrading railway defences.	***Hold the Line –*** By maintaining / upgrading railway defences.	Maintains railway as transport linkage.	No adverse impacts on designated conservation sites through holding the line.	The economic viability of the policy may depend on more detailed assessments of costs of rerouting or defending railway on current alignment. (See Note 1 below).
2:3	**Parton**	***Hold the Line –*** By maintaining / upgrading railway defences by maintaining rock revetment.	***Hold the Line –*** By maintaining / upgrading railway defences by maintaining / upgrading rock armour defences, possible addition of local flood wall or embankment.	***Hold the Line –*** By maintaining / upgrading railway defences by maintaining / upgrading defences.	Manages risk to railway station and railway and adjacent flood risk area.	Manages risk to Parton Roman Fort Scheduled Monument (part of Hadrians Wall WHS). No adverse impacts on designated conservation sites through holding the line.	The economic viability of the policy may depend on benefits from railway and heritage features (not quantified at SMP stage). (See Note 1 below).
2:4	**Parton to Harrington Parks**	***Hold the Line –*** By maintaining / upgrading railway defences.	***Hold the Line –*** By maintaining / upgrading rock armour defences, possible addition of local flood wall or embankment.	***Hold the Line –*** By maintaining / upgrading defences.	Maintains railway as transport linkage.	Manages risk to northern part of Parton Roman Fort Scheduled Monument (part of Hadrians Wall WHS). No adverse impacts on designated conservation sites through holding the line.	The economic viability of the policy may depend on more detailed assessments of costs of rerouting or defending railway on current alignment. (See Note 1 below).
2:5	**Harrington Parks to Harrington Harbour**	***Hold the Line –*** By maintaining defences due to potentially contaminated land. Undertake study to confirm policy in longer term.	***No Active Intervention –*** By ceasing maintenance of defences and allowing defences to fail and returning to more naturally evolving coast, dependent on outcome of study undertaken in the short term.	***No Active Intervention –*** No defences, allow natural evolution of shoreline up drift of harbour breakwater.	Amenity area and car park would need adaptation to facilitate roll back of the shoreline.	Potential contaminated land (e.g. slag banks) would need investigation.	Policy is economically viable. Insufficient justification for long term defences unless land is contaminated.

Location (Policy Unit)		Policy and Approach (from 2010)			Justification		
		0-20 years	20-50 years	50-100 years	Social	Environmental	Economic
2:6	**Harrington Harbour**	***Hold the Line* –** By maintaining harbour walls – assumes harbour remains operational.	***Hold the Line* –** By maintaining / upgrading harbour walls – assumes harbour remains operational and can afford improvements.	***Hold the Line* –** By maintaining / upgrading harbour walls – assumes harbour remains operational and can afford improvements.	Maintains amenity and social value associated with harbour.	No designated conservation sites present	The economic viability of the policy may depend on additional non-quantified commercial / amenity benefits of harbour use. (See Note 1 below).
2:7	**Harrington to Steel Works Site**	***Hold the Line* –** By doing nothing until railway at risk, then construct railway defences.	***Hold the Line* –** By maintaining / upgrading defences.	***Hold the Line* –** By maintaining / upgrading defences.	Maintains railway as transport linkage.	No designated conservation sites present.	The economic viability of the policy may depend on more detailed assessments of costs of rerouting or defending railway on current alignment. (See Note 1 below).
2:8	**Steel Works Site**	***Hold the Line* –** By maintaining / upgrading seawall and revetment including site developer extension and upgrades to defences.	***Hold the Line* –** By maintaining / upgrading / extending seawall and revetments, as necessary to reduce risk to the redeveloped site.	***Hold the Line* –** By maintaining / upgrading /extending seawall and revetments. – assumes as necessary to reduce risk to the redeveloped site.	Maintains integrity of Workington by managing coastal risk to Workington employment redevelopment area.	Manages risk to potential contaminated land.	The economic viability of the policy depends on the redevelopment at the site. Not economically viable for existing assets, assumes developer contributions. (See Note 1 below).
2:9	**Steel Works to The Howe**	***No Active Intervention* –** Allow continued erosion of shoreline.	***No Active Intervention* –** Allow return to naturally functioning coast.	***No Active Intervention* –** Allow return to naturally functioning coast.	No significant social assets at risk.	Slag bank has been eroding for many years, therefore minimal environmental impacts anticipated.	Insufficient economic justification for new defences.
2:10	**The Howe to Workington Harbour south breakwater**	***Managed Realignment* –** By allowing defences to fail and cliffs to form.	***Managed Realignment* –** Allow erosion until assets at risk or contaminated land justifies defences.	***Managed Realignment* –** Allow erosion until assets at risk or contaminated land justifies defences.	Set-back defence line may be required to sustain southern part of town.	Allows for management of risks from erosion of contaminated land.	Insufficient economic justification for maintaining defences on current shoreline position.
2:11	**Workington Harbour**	***Hold the Line* –** By maintaining harbour flood defence walls – assumes harbour remains operational.	***Hold the Line* –** By maintaining / upgrading harbour flood defence walls and Isabella Road embankment – assumes harbour remains operational and improvements affordable.	***Hold the Line* –** By maintaining / upgrading harbour defences – assumes harbour remains operational.	Manages flood risk to Workington.	No designated conservation sites present	Policy is economically viable due to assets at risk in flood risk area.

Key assumptions made during development

Contamination risk from previously reclaimed frontages at Harrington Parks and south of Workington is uncertain; therefore future studies will be required to address these uncertainties.

Actual erosion rates are unknown; therefore rates stated in the accompanying map are only estimates.

It has been assumed that the railway line will remain operational; however, the viability of the line in its current location will need to be addressed as sea levels rise. More detailed economic analysis will also be needed to support decisions where the value of railway infrastructure is important.

Investigations proposed in the Action Plan are needed to support decisions in connection with potential contaminated land sites.

Economic justification needs to be examined in more detail at strategy level and opportunities for co-funding need to be investigated.

The SMP policies will be subject to review if sea level rise predictions are changed.

Note 1: Policy delivery in the noted frontages may be compromised by funding prioritisation due to the low Benefit Cost Ratio and therefore opportunities for co-funding need to be investigated.

Whitehaven to Workington (11e 2)

Predicted Implications of the Policies being Adopted in this Location

Time period from 2010	*Property and population*	*Land use, infrastructure and material assets*	*Amenity and recreational use*	*Historic environment*	*Landscape character and visual amenity*	*Earth heritage soils, and geology*	*Water*	*Biodiversity, flora and fauna*
0-20 years	+ Manages risk to commercial and residential properties, and community assets in coastal towns and villages.	+ Manages flood risk to infrastructure (e.g. major roads, railway line and the Port of Workington). + Manages risk to the majority of predominantly Grade 3 agricultural land + Manages flood and erosion risk to low-lying areas of land in Whitehaven and Workington (from flooding, and areas to the north of Whitehaven Harbour	+ Manages flood and erosion risk to amenity, tourist and recreational assets	+ Manages flood risk to Old Quay and Old Quay lighthouse Scheduled Monuments at Whitehaven + Manages risk to Parton Roman Fort Scheduled Monument. – Potential damage to a dock and harbour installation, considered of high importance in the NWRCZA 2009.	● No designated landscapes within this scenario area.	● No known impacts on earth heritage or geological features.	– Potential erosion of two landfill sites with associated indirect impacts on water quality (and aesthetics) + Manages erosion risk to Chapel Bank Works landfill site on the seaward side of Isabella Road and thus no release of contaminants.	– Continued maintenance /upgrading of defences may limit partial influx of saline water to lagoon docks at Whitehaven with potential change in biodiversity interests.
20-50 years	As Above	As above, plus – Management of flood and erosion risk to the railway will become more difficult over time.	– Potential damage to or loss of the coastal path by erosion between Howe and Workington.	As above	As above	As above	As above	As above plus: – Holding the line at Harrington and to the north of Harrington may result in coastal squeeze of small areas of undesignated mudflat – Narrowing of undesignated foreshore with sea level rise.
50-100 years	As above	As above	As above	As above	As above	As above	As above	As above

Impact colour key	+ Positive	● Neutral	– Negative

Whitehaven to Workington (11e 2)

ACTION PLAN

Action	Action Ref	Action Description, (to be approved)	Potential source of funding (subject to approval)	Lead authority and key partners	To start by (subject to funding)	Outcome
1. Studies for policy area	1.1					
2. Studies for Policy Units: PU 2.5	2.1	Investigate potential contaminated land between Harrington Parks and Harrington Harbour to confirm long term policy for next SMP review	EA	ABC	2015	Management of coastal risks and informs SMP3.
3. Strategy	3.1	None proposed.				
4. Scheme Work	4.1	To be defined by specific studies highlighted through monitoring of assets, see below.	EA / LO	EA / LO	ongoing	Actions identified on Long Term Plan.
5. Monitoring (Data Collection)	5.1	Beach and coastal defence asset monitoring in conjunction with Cell 11 Regional Monitoring Strategy to inform strategy and future SMP reviews.	EA	CBC / ABC	ongoing	Data available through CERMS provides improved evidence base for future decision making.
	5.2	Monitor erosion risk to assets and contaminated land between The Howe to Workington Harbour in order to construct new defences when or if justified.	EA	ABC	ongoing	
	5.3	Monitor risk to railway line between Harrington and the steel works site in order to facilitate timely construction of / repair to defences when the risk justifies.	NR	NR, CBC, ABC	ongoing	
6. Asset Management	6.1	Maintenance of defences and beach management including management of public access	CBC/ ABC / NR	LO	ongoing	Maintenance undertaken to required standards.
7. Communication	7.1	Consult Steelworks site developers relating to flood and erosion risks and long term plans for defences.	n/a	ABC/EA	2010	Management of coastal risks.
	7.2	Monitoring and management of Action Plans to ensure SMP policies are put into practice	n/a	NWNWCG	ongoing	NWNWCG reports on progress.
8. Interface with Planning and Land Management	8.1	Advise local Planning Authority about SMP policies and flood and erosion risks so they can be accounted for in the next revisions of land use plans in order to help manage residual risks from flooding and erosion.	n/a	CBC / ABC	ongoing	Coastal risks considered in land use plans
	8.2	Advise local Planning Authority about SMP policies and flood and erosion risks so they can take due account in planning decisions and aim to reduce the need to manage flood risk in future.	n/a	CBC / ABC	ongoing	Coastal risks considered in planning decisions.
9. Emergency Response	9.1	Development, monitoring and review of emergency response plans to prepare for over design standard events.	n/a	CBC / ABC	ongoing	Coastal risks considered in emergency plans.
10. Adaptation/Resilience	10.1	None proposed.				
11. Flood Forecasting and Warning	11.1	Continue with improvements to flood risk maps and inundation modelling to provide improved flood warning service.	EA	EA	ongoing	Management of coastal risks
12. Habitat Creation and environmental mitigation	12.1	The replacement of intertidal habitat (notably mudflat) due to coastal squeeze at Harrington and to the north of Harrington (PU2.7,2.8) should be considered further at strategy or scheme level and sought through the RHCP.	LO, NR	**EA**, ABC, NR, LO	ongoing	Management of coastal risks to

NB Activities from SMP will be carried forward into medium term plans and carried out on a priority basis, subject to funding and approval. n/a = activity is part of authorities general duties, not funded through flood and erosion risk management routes.

EA = Environment Agency; Defra = Department of Environment, Food and Rural Affairs; LO = land owners; NR = Network Rail; NE = Natural England; EH = English Heritage; NWNWCG = North West and North Wales Coastal Group; CBC = Copeland Borough Council; ABC = Allerdale Borough Council; RHCP = Regional Habitat Creation Programme.

North West England and North Wales Shoreline Management Plan 2

Sub-Cell 11e: Area: 2 Map: 1

North West & North Wales Coastline
a partnership for coastal defence management

Coastal erosion estimates:

20yr: 2m to 10m
50yr: 5m to 25m
100yr: 10m to 50m

(Potential to erode back to pre-reclamation position)

11e PU2.11
11e PU2.10
11e PU2.8
11e PU2.7
11e PU2.6
11e PU2.5
11e PU2.4
11e PU2.3
11e PU2.2
11e PU2.1
11e PU1.4

Coastal erosion estimates:

20yr: Defences still present
50yr: 3m to 15m
100yr: 8m to 40m

(Potential to erode back to pre-reclamation position)

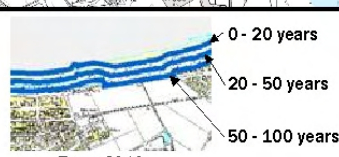
WORKINGTON
WORKINGTON CP
WINSCALES CP
DISTINGTON CP
LOWCA CP
MORESBY CP
WEDDICAR CP

Legend

- National Nature Conservation Designations
- International Nature Conservation Designations
- Scheduled Monuments
- Coastal flood risk area under extreme events, Environment Agency Flood Map, 2008

Shoreline Management Policies

- Hold the Line (HTL)
- Managed Realignment (MR)
- No Active Intervention (NAI)
- Policy Unit Boundary
- Policy Unit Extent



From 2010

Note that the policy lines on the map show the preferred shoreline management policy for each period and do not represent either the shoreline or defence location

Halcrow

N

0 0.25 0.5 1 Kilometres

Scale: 1:35,000

Boxes showing cumulative erosion estimates represent the expected minimum and maximum erosion distance from the shoreline position in 2010. They are only shown where there is a NAI policy and coastal erosion is the main risk

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Workington to Maryport (11e 3)

Recommendations:

Overview:

The towns of Workington and Maryport are key regional centres and therefore, continued flood and erosion risk management to these towns is central to the long term SMP vision for this area. Between Workington and Siddick the long term plan is to allow a naturally functioning coast, assuming wind farms will be decommissioned within 20-50 years, but continue to manage risks to current assets meanwhile. North of Risehow, defences will be allowed to fail to allow a return to a more natural shoreline, providing sediment input, from cliff erosion, to local beaches and adjacent frontages. If the railway is going to remain operational then the long term plan would be to maintain it in its current position and continue to afford defence to it along the Siddick to Risehow frontage. If the railway were not to remain, then the long term plan would be to set back defences to a more sustainable alignment.

The policies manage the risks to existing commercial, residential and community assets, a number of Scheduled Monuments and Hadrian's Wall World Heritage Site thus meeting related objectives. Areas of natural coast will be allowed to behave and erode naturally which in the long term may result in the loss of some agricultural land and isolated properties. The recommended policy is adaptive and may be influenced by longer-term changes to energy assets and railway infrastructure. Decisions on managed realignment and the timing will be influenced by knowledge on contamination and erosion rates as explored through the Action Plan.

Location (Policy Unit)		**Policy and Approach (from 2010)**			**Justification**		
		0-20 years	**20-50 years**	**50-100 years**	**Social**	**Environmental**	**Economic**
3:1	**Workington Harbour to Siddick**	***Hold The Line*** – By maintaining existing defences – assumes wind farm remains for the short term epoch. Undertake study to assess long term policy in more detail, including pollution risks from contaminated land and risks to assets.	***Managed Realignment*** – By monitoring cliff erosion and intervening when railway, wind farm or other assets are threatened or using measures to slow erosion at the cliff toe.	***Managed Realignment*** – By monitoring cliff erosion and intervening when significant assets threatened or using measures to slow erosion at the cliff toe.	Allows for management of risk to Workington, commercial assets, the railway and wind farms.	Hold the line in short-term provides time to investigate the nature of potential contamination and landfill & residual life of windfarms. Managed Realignment policy will promote more sustainable shoreline with release of some sediment to local beaches to the north.	The economic viability of the policy may depend on benefits from the railway and wind farm, not quantified at this stage, however, assets at risk of erosion & flooding are unlikely to justify continuous defences for whole frontage. (See Note 1 below).
3:2	**Siddick to Risehow**	***Hold The Line*** – By maintaining rock revetment and railway embankment.	***Hold The Line*** – By maintaining / upgrading rock revetment and railway embankment if required.	***Hold The Line*** – By maintaining / upgrading rock revetment and railway embankment if required.	Maintains transport routes (rail and A road); industrial sites, sewage works and maintains integrity of Flimby.	Manages risk to industrial assets; no designated sites present.	Policy is economically viable, based on flood risk to assets in extensive coastal flood plain including main coastal A road.
3:3	**Risehow to Maryport Marina**	***No Active Intervention*** – By allowing failure of defences and return to natural shoreline.	***No Active Intervention*** – Allow natural erosion.	***No Active Intervention*** – Allow return to naturally functioning coast.	No social assets at risk.	No Active Intervention will work with coastal processes & no known adverse impacts on Maryport Harbour SSSI.	No economic justification for maintaining / implementing coastal defences based on erosion or flood risks.
3:4	**Maryport Harbour / Marina**	***Hold The Line*** – By maintaining rock and masonry revetments and harbour defences.	***Hold The Line*** – Maintaining / upgrading defences.	***Hold The Line*** – Maintaining / upgrading defences.	Maintain integrity of Maryport town as a major coastal settlement including amenity and employment usage of harbour.	Manages risk to Scheduled Monument and heritage assets in harbour area.	The economic viability of the policy may depend on the commercial and amenity use of harbour and surrounding area. (See Note 1 below).

Key assumptions made during development

Contamination risk under a managed realignment policy north of Workington Harbour is uncertain; therefore future studies will be required to address this uncertainty.

Actual erosion rates are unknown; therefore rates stated in the accompanying map are only estimates.

Economic justification needs to be examined in more detail at strategy level and opportunities for co-funding need to be investigated.

The SMP policies will be subject to review if sea level rise predictions are changed.

Note 1: Policy delivery in the noted frontage may be compromised by funding prioritisation due to the low Benefit Cost Ratio and therefore opportunities for co-funding need to be investigated.

Workington to Maryport (11e 3)

Predicted Implications of the Policies being Adopted in this Location:

Time period from 2010	*Property and population*	*Land use, infrastructure and material assets*	*Amenity and recreational use*	*Historic environment*	*Landscape character and visual amenity*	*Earth heritage, soils and geology*	*Water*	*Biodiversity, flora and fauna*
0-20 years	+ Manages flood risk to residential, industrial and commercial premises including community facilities in Workington, Siddick and Flimby. + Manages flood risk to residential and community facilities in Maryport	+ Manages flood risk to infrastructure (e.g. A596 and the mainline railway) and material assets. + Manages flood and erosion risk to Siddick wind farms − Potential loss of predominantly Grade 3 agricultural land due to erosion between Risehow and Maryport Marina.	− Potential loss of parts of the Cumbrian Coastal Way to erosion between Risehow and Maryport Marina (but can be re-routed). + Manages flood and erosion risk to cycle route	+ Manages flood risk to up to four Scheduled Monuments and Hadrian's Wall World Heritage Site (WHS) at Burrow Walls	● No designated landscapes within this scenario area.	● No known impacts on earth heritage or geological features.	● No known impacts on water quality. + Manages flood risk to historic landfill on the north side of Workington Harbour and thus no release of contaminants.	+ Manages risk to freshwater/terrestrial habitats within nationally designated conservation sites.
20-50 years	+ Manages flood risk to residential, industrial and commercial premises including community facilities in Workington, Siddick and Flimby − Potential loss of isolated properties south of Maryport, through erosion	− Potential loss of Siddick wind farms or impacted by flooding and erosion + Managed realignment at Siddick would continue to reduce risk to railway line and coastal road. − Potential loss of predominantly Grade 3 agricultural land due to erosion between Risehow and Maryport Marina.	As above	− Potential damage to a barrow, considered of medium importance during the NWRCZA 2009.	As above	As above	As above	− Potential loss of neutral grassland due to erosion at Maryport Harbour SSSI though the vegetation is currently undergoing natural succession + Natural processes through No active intervention or Managed realignment will allow the inland migration of intertidal habitat (e.g. mudflats at Workington)
50-100 years	As above	As above	As above	As above	As above	As above	As above	− Potential coastal narrowing of undesignated foreshore in some areas due to sea level rise and defences, and associated loss of mudflats.

Impact colour key	+ Positive	● Neutral	− Negative

Workington to Maryport (11e 3)

ACTION PLAN

Action	**Action Ref**	**Action Description,** (to be approved)	**Potential source of funding** (subject to approval)	**Lead authority** and key partners	**To start by** (subject to funding)	**Outcome**
1. Studies for policy area	1.1	-				
2. Studies for Policy Units: PU3.1	2.1	Undertake study to assess long term policy in more detail between Workington and Siddick in more detail, including assessing pollution risks from contaminated land and flood and erosion risks to assets including wind farm and railway. (required to inform next review of SMP)	EA	ABC	2015	Study informs actions for Long Term Plan and SMP3..
PU 3.3	2.2	Review the sustainability of removal of accumulated shingle from south of Maryport harbour from coastal system and need for bypassing.	EA	EA	2015	Management of coastal risks.
3. Strategy	3.1	None proposed.				
4. Scheme Work	4.1	To be defined by site specific studies identified through monitoring of risks.	EA, ABC, NR, LO	EA, ABC, NR, LO	ongoing	Actions identified on Long Term Plan.
5. Monitoring (Data Collection)	5.1	Undertake beach and coastal defence asset monitoring in conjunction with Cell 11 Regional Monitoring Strategy to inform strategy and future SMP reviews	EA	ABC	ongoing	Data available through CERMS provides improved evidence base for future decision making.
6. Asset Management	6.1	Maintenance of defences and beach management including management of public access	LO	LO	ongoing	Maintenance undertaken to required standards.
7. Communication	7.1	Monitoring and management of Action Plans to ensure SMP policies are put into practice	n/a	NWNWCG	ongoing	NWNWCG reports on progress.
	7.2	Undertake consultation during implementation phase, including foreshore freehold owner from Workington to Flimby.	n/a	ABC, EA, LO	ongoing	Public and land owner participation.
8. Interface with Planning and Land Management	8.1	Advise local Planning Authority about SMP policies and flood and erosion risks so they can be accounted for in the next revisions of land use plans in order to help manage residual risks from flooding and erosion.	n/a	ABC	ongoing	Coastal risks considered in land use plans.
	8.2	Advise local Planning Authority about SMP policies and flood and erosion risks so they can take due account in planning decisions and aim to reduce the need to manage flood risk in future.	n/a	ABC	ongoing	Coastal risks considered in planning decisions.
9. Emergency Response	9.1	Development, monitoring and review of emergency response plans to prepare for over design standard events.	n/a	ABC	ongoing	Coastal risks considered in emergency plans.
10. Adaptation/Resilience	10.1	Review SMP policy if there are changes to the future of the railway	n/a	ABC	ongoing	Management of coastal risks.
11. Flood Forecasting and Warning	11.1	Continue with improvements to flood risk maps and inundation modelling to provide improved flood warning service.	EA	EA	ongoing	Management of coastal risks.
12. Habitat Creation and environmental mitigation	12.1	Seek opportunities for environmental enhancement as part of FRM works at strategy or scheme level e.g. scrub management at Maryport Harbour SSSI	EA, LO	EA, LO, ABC, NE	ongoing	Management of coastal risks to coastal habitats
	12.2	The replacement of intertidal habitat due to coastal squeeze related to defences should be considered further at strategy or scheme level and in the RHCP.	EA	EA	ongoing	Management of coastal risks to coastal habitats.

NB Activities from SMP will be carried forward into medium term plans and carried out on a priority basis, subject to funding and approval. n/a = activity is part of authorities general duties, not funded through flood and erosion risk management routes.

ABC = Allerdale Borough Council; Defra = Department of Environment, Food and Rural Affairs; EA = Environment Agency; EH = English Heritage; LO = land owners; NE = Natural England; NR = Network Rail; NWNWCG = North West and North Wales Coastal Group; RHCP = Regional Habitat Creation Programme.

North West England and North Wales Shoreline Management Plan 2

Sub-Cell 11e: Area: 3 Map: 1

North West & North Wales Coastline
a partnership for coastal defence management

Coastal erosion estimates:

20yr: 2m to 10m
50yr: 5m to 25m
100yr: 10m to 50m

11e PU3.4
11e PU3.3
11e PU3.2
11e PU3.1
11e PU2.11
11e PU2.10

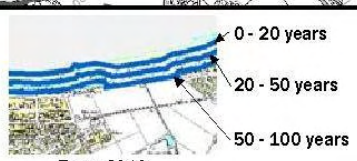
MARYPORT
MARYPORT CP
Ewanrigg
Risehow
Flimby
Flimby Great Wood
Buckbank Wood
Moorside Farm
Eaglegill
Camerton Grange
SEATON CP
High Seaton
Wise House Farm
Camerton
Seaton
Low Seaton
North Side
Stainburn
Great Clifton
Clifton Hall
Fothergill
Siddick
Hazel Gill
New Kelsick Farm
Hawk Hill
Calva Hill
Cloffocks
Curwen Park
Stainburn Hall Farm
Searbank Wood
Seat House Farm
Uplands
Hen Gill
Dark Gill
Eagle Gill
Siddick Ponds Nature Reserve
Burrow Walls ROMAN FORT
Hallgards
Spring Wood
Cultivation Terraces

Legend

- National Nature Conservation Designations
- International Nature Conservation Designations
- Scheduled Monuments
- Coastal flood risk area under extreme events, Environment Agency Flood Map, 2008

Shoreline Management Policies

- Hold the Line (HTL)
- Managed Realignment (MR)
- No Active Intervention (NAI)
- Policy Unit Boundary
- Policy Unit Extent



Note that the policy lines on the map show the preferred shoreline management policy for each period and do not represent either the shoreline or defence location

Halcrow

N 0 0.25 0.5 1 Kilometres
Scale: 1:25,000

Boxes showing cumulative erosion estimates represent the expected minimum and maximum erosion distance from the shoreline position in 2010. They are only shown where there is a NAI policy and coastal erosion is the main risk

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Maryport to Dubmill Point (11e 4)

Recommendations:

Overview:

The long term plan is to continue to manage flood and erosion risks to Maryport and Allonby, noting however that coastal processes link the whole bay and any intervention would need to be considered strategically. To the north, the coast should be allowed to return to a more naturally functioning system, enabling sediment transport to build beaches. This approach would need some rerouting of the road at Dubmill Point at a future time. Areas of No Active Intervention will result in a more naturally functioning coast line but will result in increased risk of flooding and erosion to a number of isolated properties, the Maryport golf course and parts of the Hadrians Wall World Heritage Site. In addition to the need to reroute the road at Dubmill Point, the coastal road north and south of Allonby will also be at an increasing risk of flooding in the long term. The recommended policy is largely adaptive with the timing of transition to natural shoreline determined by actual erosion rates. These will be investigated in more detail as part of the Action Plans together with providing more detailed information on economic valuations in support of short term hold the line policies.

Location (Policy Unit)		**Policy and Approach (from 2010)**			**Justification**		
		0-20 years	**20-50 years**	**50-100 years**	**Social**	**Environmental**	**Economic**
4:1	**Maryport Harbour to Roman Fort (Maryport)**	***Hold the Line –*** By maintaining the seawall.	***Hold the Line –*** By maintaining / upgrading the seawall.	***Hold the Line –*** By maintaining / upgrading the seawall.	Maintains integrity of Maryport as major coastal settlement.	Manages risk to Scheduled Monument, part of Hadrian's Wall World Heritage Site & recreational features.	The economic viability of the policy may depend on the inclusion of environmental / heritage / amenity benefits. (See Note 1 below).
4:2	**Roman Fort to Bank End (Maryport Promenade)**	***Hold the Line –*** By maintaining defences, but seek to withdraw maintenance as soon as practicable.	***No Active Intervention–*** By allowing defences to fail.	***No Active Intervention–*** Return to more natural coast in longer term.	Short term risks to the promenade will continue to be managed.	Return to naturally eroding cliff in longer term.	The economic viability of the short term policy may depend on environmental / heritage / amenity benefits. However, insufficient justification for long term hold the line. (See Note 1 below).
4:3	**Maryport Golf Course to Allonby**	***Managed Realignment –*** Return to natural shoreline where practicable. Local limited intervention at Heritage assets if required.	***Managed Realignment –*** Return to natural shoreline where practicable. Local limited intervention at Heritage assets if sustainable to do so.	***Managed Realignment –*** Naturally evolving shoreline, with sediment supply benefiting rest of bay. Local limited intervention at Heritage assets if sustainable to do so.	Presently only localised defences. Coastal road B5300 will be at significant risk in medium and long term, so may need to raise or relocate inland.	Short term managed risk to Saltpans, but may not be sustainable to do so into the long term. Works with natural processes but Public Rights of Way at significant risk in long-term.	The economic viability of the policy may depend on heritage / amenity and infrastructure. benefits. (See Note 1 below).
4:4	**Allonby**	***Hold the Line –*** By monitoring shoreline change and flood risk until the village is at significant risk, and then construct new sea defences.	***Hold the Line –*** By monitoring shoreline change and flood risk until the village is at significant risk, then construct new sea defences / maintain defences.	***Hold the Line –*** By maintaining / upgrading the defences.	Maintains integrity of Allonby as coastal settlement.	Localised defences expected to be limited to set back flood walls and beach / dune management.	Intervention with defences not anticipated until medium term epoch, small scale scheme difficult to assess at this stage, but economically viability will depend on local properties and infrastructure benefits. (See Note 1 below).
4:5	**Allonby to Seacroft Farm**	***No Active Intervention–*** Allow continued natural coastal evolution.	***No Active Intervention–*** Allow continued natural coastal evolution.	***No Active Intervention–*** Allow continued natural coastal evolution.	No social assets at risk.	Allows continuation of natural processes.	Insufficient economic justification for intervention.

Location (Policy Unit)		Policy and Approach (from 2010)			Justification		
		0-20 years	20-50 years	50-100 years	Social	Environmental	Economic
4:6	Seacroft Farm to Dubmill Point	***Hold The Line –*** Maintain defences to allow time to re-route road. Undertake study to investigate the impacts of erosion of Dubmill Point on Mawbray village. Dependent on the outcome of studies, early implementation of No Active Intervention should be considered where practicable.	***No Active Intervention–*** Dependent on the outcome of the study, allow defences to fail.	***No Active Intervention–*** No defences.	Diversion of coastal route linking Allonby to Silloth to more sustainable location. Road and defences are currently subject to storm damage, and this will get worse with expected onset of sea level rise.	Works with natural processes.	Withdrawal from defence will depend upon economic case for re-routing the coastal B road.

Key assumptions made during development

Actual erosion rates are unknown; therefore rates stated in the accompanying map are only estimates.

Economic justification needs to be examined in more detail at strategy level and opportunities for co-funding need to be investigated.

The SMP policies will be subject to review if sea level rise predictions are changed.

Note 1: Policy delivery in the noted frontage may be compromised by funding prioritisation due to the low Benefit Cost Ratio and therefore opportunities for co-funding need to be investigated.

Maryport to Dubmill Point (11e 4)

Predicted Implications of the Policies being Adopted in this Location:

Time period from 2010	*Property and population*	*Land use, infrastructure and material assets*	*Amenity and recreational use*	*Historic environment*	*Landscape character and visual amenity*	*Earth heritage, soils and geology*	*Water*	*Biodiversity, flora and fauna*
0-20 years	+ Manages flood and erosion risk to Maryport town (including residential properties and community facilities within the town)	● No changes to existing flood risks in most locations	● No significant change to flood and erosion risks to assets.	● No significant change to risks to historic assets.	● No significant changes.	− Holding the line may restrict erosion and natural evolution of the maritime cliffs and slopes to the north of Maryport.	● No significant change due to flood and erosion risks.	− Potential loss of intertidal habitat due to coastal squeeze, within and outside of designated conservation sites where holding the line + Natural roll-back of sand dunes between Maryport Golf Course and Allonby.
20-50 years	As above plus: − Increasing flood-risk to isolated properties (e.g. Staith House). + Manages increasing flood risks at Allonby	− Increasing risk of flooding of the main B5300 road (and Staith Bridge) at extreme tides north and south of Allonby. + Re- routed B5300 at Dubmill Point at less risk	− Maryport Golf Course at increased risk of flooding and erosion during high tides and storm events. + Manages risk to large sections of the Cumbria Coastal Way**)** but some sections would require re-routing due to erosion. − Loss of northern part of Maryport Promenade	− Potential damage or change in setting of parts of Hadrian's Wall World Heritage Site (WHS) due to erosion and flooding. ● Allows for management of risks to salt pans from erosion − Increased flood and erosion risk to Dubmill Point Milefortlet Scheduled Monument	As above	As above	As above	+ No active intervention and managed realignment is considered beneficial to the designated conservation sites, avoiding the deterioration of the designated habitats and associated species.
50-100 years	As above	As above	As above	As above	● Potential change in identity and landscape character of the Solway Coast AONB through the loss of salt pans, which are an important component of the landscape.	As above	● Potential changes to shellfisheries due to changes in sediment patterns and increased areas for spawning - impact uncertain	● Most policies work with natural processes so low potential for impacts on international conservation sites north of Dubmill Point including;- Upper Solway Flats and Marshes SPA & Ramsar, SSSI; Solway Firth SAC (except in areas where HTL where there could be potential adverse effects).

Impact colour key	+ Positive	● Neutral	− Negative

Maryport to Dubmill Point (11e 4)

ACTION PLAN

Action	**Action Ref**	**Action Description,** (to be approved)	**Potential source of funding** (subject to approval)	**Lead authority** and key partners	**To start by** (subject to funding)	**Outcome**
1. Studies for policy area	1.1					
2. Studies for Policy Units: **PU 4.2**	2.1	Develop adaptation plan including case for future intervention or local defences at Bank End to inform future policy	EA	ABC	2015	Management of coastal risks.
PU 4.3	2.2	Consider risks to coastal road and heritage features and need for short term protection or adaptation.	EA, HA,EH	**ABC, HA, EH**	2015	Management of coastal risks.
PU 4.4	2.3	Develop a beach/dune management plan to encourage dune development and maintain dunes as a natural defence.	EA	**ABC**, EA	2015	Management of coastal risks.
PU 4.6	2.4	Undertake study to investigate the impacts of erosion of Dubmill Point on Mawbray village. Develop approach to adaptation for coastal road.	EA	**ABC**, HA, EA	2015	Management of coastal risks.
3. Strategy	3.1	-				
4. Scheme Work	4.1	To be defined by studies in policy units above and monitoring	EA, ABC, HA, LO	EA, ABC,HA, LO	ongoing	Actions identified on Long Term Plan.
5. Monitoring (Data Collection)	5.1	Undertake beach and coastal defence asset monitoring in conjunction with Cell 11 Regional Monitoring Strategy to inform strategy and future SMP reviews	EA	EA	ongoing	Data available through CERMS provides improved evidence base for future decision making.
	5.2	Monitor shoreline change and flood risk at Allonby to allow future studies to determine when risk justifies the construction of new defences.	EA	ABC	ongoing	
6. Asset Management	6.1	Maintenance of defences and beach and dune management including management of public access	EA, LO, ABC	ABC,EA,LO,	ongoing	Maintenance undertaken to required standards.
7. Communication	7.1	Monitoring and management of Action Plans to ensure SMP policies are put into practice	n/a	NWNWCG	ongoing	NWNWCG reports on progress.
8. Interface with Planning and Land Management	8.1	Advise local Planning Authority about SMP policies and flood and erosion risks so they can be accounted for in the next revisions of land use plans in order to help manage residual risks from flooding and erosion.	n/a	ABC	ongoing	Coastal risks considered in land use plans
	8.2	Advise local Planning Authority about SMP policies and flood and erosion risks so they can take due account in planning decisions and aim to reduce the need to manage flood risk in future.	n/a	ABC	ongoing	Coastal risks considered in planning decisions.
9. Emergency Response	9.1	Development, monitoring and review of emergency response plans to prepare for over design standard events.	n/a	ABC	ongoing	Coastal risks considered in emergency plans.
10. Adaptation/Resilience	10.1	See items 2.1, to 2.4, 2.2 & 12.3				
11. Flood Forecasting and Warning	11.1	Continue with improvements to flood risk maps and inundation modelling to provide improved flood warning service.	EA	EA	ongoing	Management of coastal risks.
12. Habitat Creation and environmental mitigation	12.1	Undertake a Habitat Regulations Assessment at scheme level for any proposed works	EA, HA, LO	ABC, NE, EA	ongoing	Meet legal requirements.
	12.2	In conjunction with Action 2.2 Investigate the landscape and heritage value of the saltpans within the Solway Coast AONB in consultation with Natural England and English Heritage and inform on the need for mitigation or justification for local short term intervention and next revision of SMP	EH, NE	EA, NE, EH	2015	Management of coastal risks.
	12.3	Undertake a more detailed investigation of the likely impacts of coastal change on historic environment features of the World Heritage Site and propose adaptation approaches such as local temporary protection from erosion and /or recording before loss of features at risk.	EH	EH	2020	Management of coastal risks to heritage assets.

NB Activities from SMP will be carried forward into medium term plans and carried out on a priority basis, subject to funding and approval. n/a = activity is part of authorities general duties, not funded through flood and erosion risk management routes.

ABC = Allerdale Borough Council; Defra = Department of Environment, Food and Rural Affairs; EA = Environment Agency; EH = English Heritage; LO = land owners; NE = Natural England; NWNWCG = North West and North Wales Coastal Group;

North West England and North Wales Shoreline Management Plan 2

Sub-Cell 11e: Area: 4 Map: 1

North West & North Wales Coastline
a partnership for coastal defence management

Coastal erosion estimates:

20yr: Following defence failure 1m to 5m
50yr: 4m to 20m
100yr: 9m to 45m

11e PU4.6

11e PU4.5

11e PU4.4

11e PU4.3

Coastal erosion estimates:

20yr: Defences still present
50yr: 3m to 17m
100yr: 8m to 42m

11e PU4.2

11e PU4.1

11e PU3.4

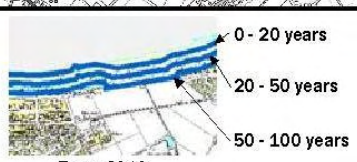
11e PU3.3

Legend

- National Nature Conservation Designations
- International Nature Conservation Designations
- Scheduled Monuments
- Coastal flood risk area under extreme events, Environment Agency Flood Map, 2008

Shoreline Management Policies

- Hold the Line (HTL)
- Managed Realignment (MR)
- No Active Intervention (NAI)
- Policy Unit Boundary
- Policy Unit Extent



Note that the policy lines on the map show the preferred shoreline management policy for each period and do not represent either the shoreline or defence location

Halcrow

N

0 0.25 0.5 1 Kilometres

Scale: 1:35,000

Boxes showing cumulative erosion estimates represent the expected minimum and maximum erosion distance from the shoreline position in 2010. They are only shown where there is a NAI policy and coastal erosion is the main risk

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Dubmill Point to Silloth (11e 5)

Recommendations:

Overview:

Along this section of coast the long term vision is to maintain a naturally functioning system & conserve the environmental status of this area. There is insufficient economic justification for any significant interventions with coastal defences along this section. This plan allows for adaptation where there are assets at risk and will result in a naturally functioning, and sustainable coast line, maintaining the current natural habitats into the long term, but will result in the loss of a strip of agricultural land and increasing risks to the B5300 coast road at Beckfoot. The implementation of the policy will need to manage residual risks to isolated properties and assets.

Location (Policy Unit)		**Policy and Approach (from 2010)**			**Justification**		
		0-20 years	**20-50 years**	**50-100 years**	**Social**	**Environmental**	**Economic**
5:1	**Dubmill Point to Silloth**	***Managed Realignment*** **–** Allow continued natural coastal evolution with localised limited intervention to manage risk to assets whilst adaptation is considered. Risk should be monitored and the case for local set back flood defences, individual property defences or resilience to be considered in medium term.	***Managed Realignment*** **–** Allow continued natural coastal evolution, with continuing adaptation measures.	***Managed Realignment*** **–** Allow continued natural coastal evolution, with continuing adaptation measures..	Presently only limited assets are at risk at Beckfoot. Risk should be monitored and case for local flood defences / individual property defences or resilience to be considered in medium term.	Natural coastal evolution will contribute to maintaining condition of internationally and nationally designated conservation sites. Managed realignment will allow for limited intervention at Beckfoot Cemetary whilst recording and adaptation is considered.	Limited assets at risk of flooding or erosion, so likely to be insufficient economic justification for national expenditure on defences. However, policy allows for provision to private funding of defences if required.

Key assumptions made during development

Actual erosion rates are unknown, therefore rates stated in the accompanying map are only estimates.

The SMP policies will be subject to review if sea level rise predictions are changed.

Dubmill Point to Silloth (11e 5)

Predicted Implications of the Policies being Adopted in this Location:

Time period from 2010	*Property and population*	*Land use, infrastructure and material assets*	*Amenity and recreational use*	*Historic environment*	*Landscape character and visual amenity*	*Earth heritage, soils and geology*	*Water*	*Biodiversity, flora and fauna*
0-20 years	● Increasing flood risk at Beckfoot during high tides, but managed realignment policy will allow for consideration of set back defences or resilience measures.	− Increasing risk to grade 3 agricultural land due to erosion and flooding ● increasing risk of flooding to B5300, but managed realignment policy will allow for short term adaptation measures.,	● Continued accretion of the dunes will maintain the integrity of the golf course ● Assuming the dunes continue to accrete, the integrity of the coastal paths are likely to remain	● Managed Realignment policy will allow for adaptation measures and / or recording at the undesignated Roman Cemetery at Beckfoot, where there is ongoing erosion. See 'landscape' with regard to the Hadrian's Wall Buffer Zone WHS.	● No change in identity and landscape character of the Solway Coast Area of Outstanding Natural Beauty (AONB). ● No change in landscape or visual setting of Hadrian's Wall WHS buffer zone.	+ Continued stability of coastal sand dunes and natural roll-back and continued accretion of dunes at Silloth.	● Potential changes to shellfisheries due to changes in sediment patterns and increased areas for spawning - impact uncertain	+ The continuation of natural processes will allow the migration of intertidal habitats inland, the continued accretion of sand dunes and no restrictions on dune movement. Beneficial impacts on international conservation sites (Upper Solway Flats and Marshes SPA, Ramsar and Solway Firth SAC) + Beneficial impacts on Silloth Dunes and Mawbray Bank SSSI
20-50 years	− Increasing flood risk at Beckfoot during high tides and erosion risk to properties in Beckfoot village, but managed realignment policy will allow for consideration of set back defences or resilience measures.	As above	As above	As above	As above	As above	As above	As above
50-100 years	As above	− increasing risk of flooding to B5300, − Potential for permanent loss of grade 3 agricultural land due to erosion and flooding	● Potential erosion of the dunes (if channel moves landward) is likely to have minimal impacts on the golf course − Potential erosion of some sections of the Cumbrian Coastal Way if the channel moves landward	As above	As above	− Potential for some dune erosion (and coastal squeeze of dunes where localised defences remain)	As above	As above

Impact colour key	+ Positive	● Neutral	− Negative

Dubmill Point to Silloth (11e 5)

ACTION PLAN

Action	Action Ref	Action Description, (to be approved)	Potential source of funding (subject to approval)	Lead authority and key partners	To start by (subject to funding)	Outcome
1. Studies for policy area	1.1					
2. Studies for Policy Units: PU 5.1	2.1	Undertake a study to investigate and identify approaches for adaptation to coastal change for coastal road at Beckfoot and Castle's Corner adaptation measures for the erosion risks, particularly	EA, Defra, HA	ABC, EA, HA	2015	Management of coastal risks.
3. Strategy	3.1	None proposed.				
4. Scheme Work	4.1	Actions identified from monitoring and above studies.	EA, HA, Defra	EA, HA, Defra	2015	Actions identified on Long Term Plan.
5. Monitoring (Data Collection)	5.1	Undertake beach and dune monitoring in conjunction with Cell 11 Regional Monitoring Strategy to inform future SMP reviews	EA	ABC	ongoing	Data available through CERMS provides improved evidence base for future decision making.
	5.2	Continued monitoring of the condition of internationally and nationally designated conservation sites	NE	NE	ongoing	
6. Asset Management	6.1	Maintenance of defences and beach and dune management including management of public access	EA, LO, ABC	ABC,EA,LO,	ongoing	Maintenance undertaken to required standards.
7. Communication	7.1	Monitoring and management of Action Plans to ensure SMP policies are put into practice	n/a	NWNWCG	ongoing	NWNWCG reports on progress.
8. Interface with Planning and Land Management	8.1	Advise local Planning Authority about SMP policies and flood and erosion risks so they can be accounted for in the next revisions of land use plans in order to help manage residual risks from flooding and erosion.	n/a	ABC	ongoing	Coastal risks considered in land use plans
	8.2	Advise local Planning Authority about SMP policies and flood and erosion risks so they can take due account in planning decisions and aim to reduce the need to manage flood risk in future.	n/a	ABC	ongoing	Coastal risks considered in planning decisions.
9. Emergency Response	9.1	Development, monitoring and review of emergency response plans to prepare for over design standard events.	n/a	ABC	ongoing	Coastal risks considered in emergency plans.
10. Adaptation/Resilience	10.1	Consider flood risks to individual properties at Beckfoot and case for future adaptation or resilience measures; See item 12.1.	ABC / Defra /EA	ABC	ongoing	Management of coastal risks.
11. Flood Forecasting and Warning	11.1	Continue with improvements to flood risk maps and inundation modelling to provide improved flood warning service.	EA	EA	ongoing	Updated flood maps and improved flood warning service to increased numbers of properties affected.
12. Environmental mitigation	12.1	Assess the visual and landscape impacts of raising or extending defences at strategy or scheme level on the buffer zone of Hadrian's Wall WHS, in consultation with English Heritage. Undertake a more detailed investigation of the likely impacts of coastal change on historic environment features of the World Heritage Site and Beckfoot Roman Cemetery, and propose adaptation approaches such as local temporary protection from erosion and /or recording before loss of features at risk.	EH	EH	2020	Management of coastal risks to heritage features.

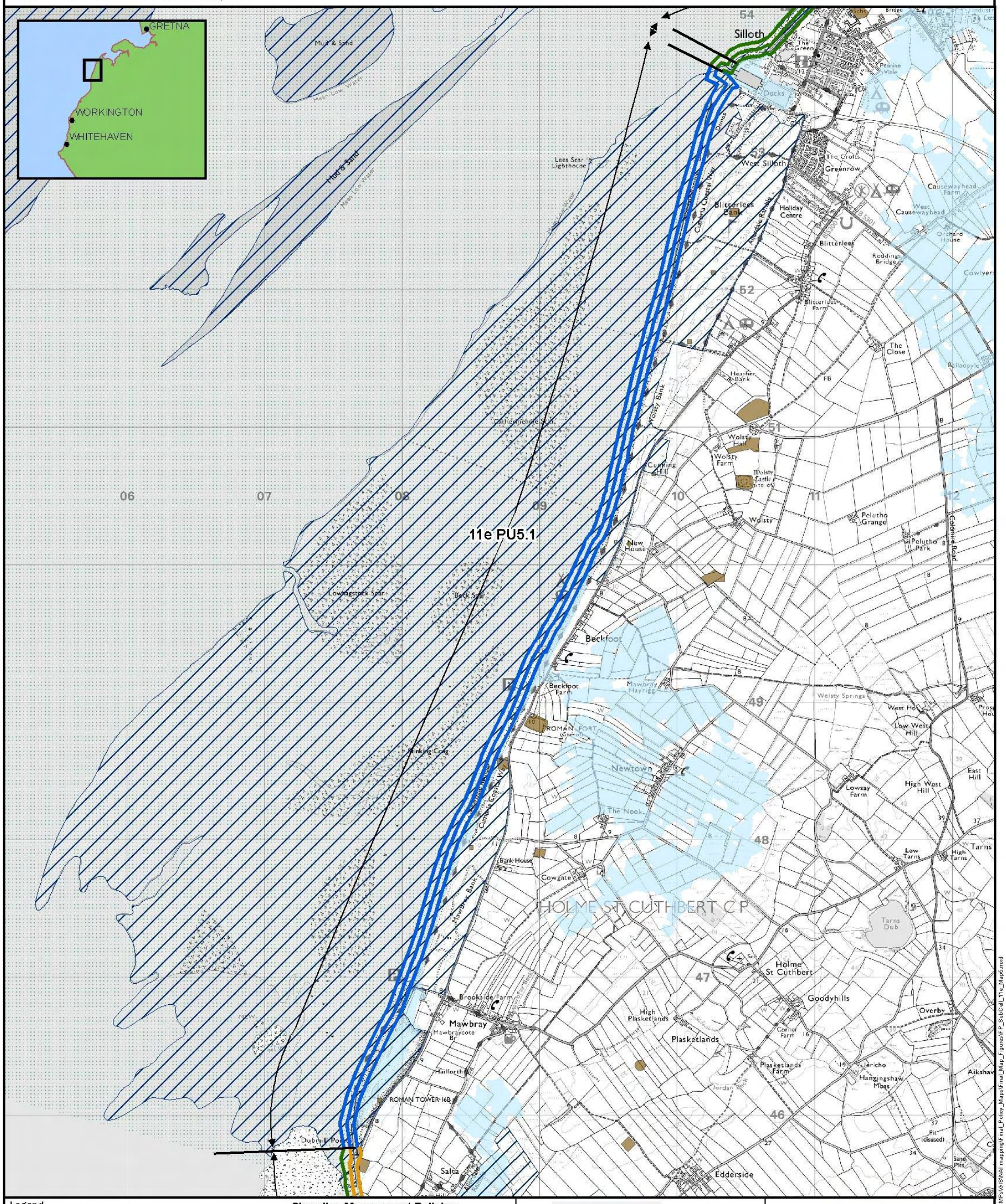
NB Activities from SMP will be carried forward into medium term plans and carried out on a priority basis, subject to funding and approval. n/a = activity is part of authorities general duties, not funded through flood and erosion risk management routes.

ABC = Allerdale Borough Council; Defra = Department of Environment, Food and Rural Affairs; EA = Environment Agency; EH = English Heritage; LO = land owners; NE = Natural England; NR = Network Rail; NWNWCG = North West and North Wales Coastal Group.

North West England and North Wales Shoreline Management Plan 2

Sub-Cell 11e: Area: 5 Map: 1

North West & North Wales Coastline
a partnership for coastal defence management



Legend

- National Nature Conservation Designations
- International Nature Conservation Designations
- Scheduled Monuments
- Coastal flood risk area under extreme events, Environment Agency Flood Map, 2008

Shoreline Management Policies

- Hold the Line (HTL)
- Managed Realignment (MR)
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- Policy Unit Boundary
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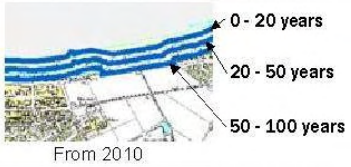

Note that the policy lines on the map show the preferred shoreline management policy for each period and do not represent either the shoreline or defence location

Halcrow

N 0 0.25 0.5 1 Kilometres
Scale: 1:25,000

Boxes showing cumulative erosion estimates represent the expected minimum and maximum erosion distance from the shoreline position in 2010. They are only shown where there is a NAI policy and coastal erosion is the main risk

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Silloth to The Grune (11e 6)

Recommendations:

Overview:

Management of flood and erosion risks to the town centre of Silloth remains a key aspect of the long term plan. To the east of the town, in the longer term there is a need to balance risks related to managing erosion risk to properties, flood risk to the hinterland and further southerly migration of the channel, against potential environmental impacts. The long term viability of controlling the spit along its current line needs to be reviewed, however until this review has been carried out the defences should be maintained throughout.

The plan for the natural section of the Grune frontage will result in a naturally functioning coastline, However the defences used to hold the line updrift at Silloth may interrupt the sediment movement and restrict the natural development of the point and result in environmental impacts such as coastal squeeze, although risk to infrastructure and assets in Silloth will be managed.

Location (Policy Unit)		**Policy and Approach (from 2010)**			**Justification**		
		0-20 years	**20-50 years**	**50-100 years**	**Social**	**Environmental**	**Economic**
6:1	**Silloth Harbour**	***Hold the Line*** – By maintaining harbour walls– assumes harbour remains operational.	***Hold the Line*** – By maintaining / upgrading harbour walls – assumes harbour remains operational.	***Hold the Line*** – By maintaining / upgrading harbour walls – assumes harbour remains operational.	Maintains integrity of Silloth as a coastal settlement.	Manages risk to Silloth but with potentially detrimental effect on international sites (Upper Solway Flats and Marshes SPA/Ramsar and Solway Firth SAC).	The economic viability of the policy relates to the economic / commercial viability of harbour. (See Note 1 below).
6:2	**Silloth to Skinburness (open coast)**	***Hold the Line*** – By maintaining stepped seawall and rock revetment and repairing or upgrading groynes / beach recharge / material bypass. (Strategy study, including Coastal Process and Habitats Regulations Assessment required to confirm policies for Silloth to Moricambe Bay).	***Hold the Line*** – Depending on strategic review, hold the line by maintaining / upgrading defences, potential to construct defences across the neck of the spit to reduce risk to the village from back-door flooding if the spit breaches.	***Hold the Line*** – Depending on strategic review, hold the line by maintaining / upgrading defences.	Maintains integrity of coastal settlements, but long term sustainability of dispersed coastal settlements will need to be reviewed.	Policy may adversely impact on internationally designated sites in the long-term, although hold the line could involve shingle recharge as a possible option, which could be beneficial. It should also be considered that a policy of No active intervention could also have a detrimental effect on coastal morphology, which may adversely affect international conservation designations. This needs to be considered in the coastal process and strategy study, in consultation with Natural England.	The economic viability of the policy depends on the risks and costs including environmental benefits and dis-benefits related to coastal processes and / or a potential breach. (See Note 1 below).
6:3	**The Grune**	***No Active Intervention*** – Allow continued natural coastal evolution.	***No Active Intervention*** – Allow continued natural coastal evolution.	***No Active Intervention*** – Allow continued natural coastal evolution.		Coastal process and strategy study is recommended for this policy area, which should consider the linkages between the Grune and the adjacent internationally designated sites.	No economic justification for intervention.

Key assumptions made during development

Coastal process and strategy study is recommended for this policy area and Moricambe Bay, which should consider the linkages between the Grune and the long term evolution of the adjacent Internationally designated sites.

Uncertainty remains about the economic and environmental justification of the hold the line policy between Silloth and Skinburness. This requires a strategy level assessment including coastal process study and economic analysis.

Economic justification needs to be examined in more detail at strategy level and opportunities for co-funding need to be investigated.

The SMP policies will be subject to review if sea level rise predictions are changed.

Note 1: Policy delivery in the noted frontage may be compromised by funding prioritisation due to the low Benefit Cost Ratio and therefore opportunities for co-funding need to be investigated.

Silloth to The Grune (11e 6)

Predicted Implications of the Policies being Adopted in this Location:

Time period from 2010	*Property and population*	*Land use, infrastructure and material assets*	*Amenity and recreational use*	*Historic environment*	*Landscape character and visual amenity*	*Earth heritage soils, and geology*	*Water*	*Biodiversity, flora and fauna*
0-20 years	+ Manages flood and erosion risk to small settlements and coastal villages (e.g. Silloth and Skinburness) and isolated properties on the Cumbrian Coast.	+ Manages flood and erosion risk to infrastructure (e.g. B5302 link road). + Manages flood risk to Grade 3 agricultural land. + Manages risk to Silloth docks (Marshall Dock and New Dock) from flooding by maintenance of the harbour walls.	+ Manages risk to the Cumbrian Coastal Way and Allerdale Ramble (except at The Grune).	+ Manages flood risk to the Skinburness Scheduled Monument. See 'landscape' with regard to the Hadrian's Wall Buffer Zone WHS.	● Maintaining the defences is likely to retain the existing identity and landscape character of the Solway Coast AONB. ● Maintaining the existing defences is unlikely to affect the landscape or visual setting of Hadrian's Wall WHS buffer zone	– The continued use of groynes between Silloth and Skinburness to hold the line will attempt to artificially fix the shoreline and prevent its natural migration. + A continuation of natural processes at the Grune will enable the natural roll-back of coastal sand dunes at The Grune.	● No known impacts on water quality. ● Potential changes to shellfisheries off the coast of Moricambe due to changes in sediment patterns and increased areas for spawning. - impact uncertain.	+ The continuation of natural processes will allow the continued accretion of the shingle bank at the end of The Grune.
20-50 years	– Increasing risk of erosion to an area of the Green in Silloth.	As above	As above	As above	– Any upgrading of the existing seawall, groynes and potential construction of defences across the spit has the potential to change the landscape character and reduce views afforded of the sea. Solway Coast AONB. – Raising or extending defences has the potential to affect the landscape and visual setting of Hadrian's Wall WHS buffer zone.	As above	As above	– Potential for adverse effects on international conservation sites due to coastal squeeze from holding the line or a breach in defences at Grune, within ○ Upper Solway Flats and Marshes SPA & Ramsar, SSSI. ○ Solway Firth SAC
50-100 years	– Increasing flood risk to up to 20 properties in the vicinity of The Grune.	As above	– Potential breach of the Grune would make it inaccessible to tourists and result in the loss of coastal paths within the Grune.	As above	As above	As above	As above	As above

Impact colour key	+ Positive	● Neutral	– Negative

Silloth to The Grune (11e 6)

ACTION PLAN

Action	Action Ref	Action Description (to be approved)	Potential source of funding (subject to approval)	Lead authority and key partners	To start by (subject to funding)	Outcome
1. Studies for policy area	1.1	Undertake Strategy and process study to confirm policies for Silloth to Moricambe Bay, address the issues of interruption of shoreline sediment transport and confirm longer term policy for Silloth to Skinburness frontage. Study to include a more detailed Habitats Regulations Assessment and link to RHCP.	EA	**ABC**, NE, EA	2015	Management of coastal risks.
2. Studies for Policy Units:	2.1	See above				
3. Strategy	3.1	Strategy to be confirmed by study for Silloth to Moricambe Bay, see item 1.1	n/a	ABC	2015	Management of coastal risks.
4. Scheme Work	4.1	To be defined by strategy study.	LO	LO	ongoing	Actions identified on Long Term Plan.
5. Monitoring (Data Collection)	5.1	Undertake beach and coastal defence asset monitoring in conjunction with Cell 11 Regional Monitoring Strategy to inform strategy and future SMP reviews	EA	ABC	ongoing	Data available through CERMS provides improved evidence base for future decision making.
	5.2	Continued monitoring of condition of designated conservation sites to provide baseline data for future Habitat Regulations Assessments	NE	NE	ongoing	
6. Asset Management	6.1	Maintenance of defences and beach management including management of public access	LO, ABC	LO, ABC	ongoing	Maintenance undertaken to required standards.
7. Communication	7.1	Undertake consultation with key stakeholders, particularly Natural England and RSPB and general public during strategy development	n/a	ABC	2015	Public participation and statutory consultation.
	7.2	Monitoring and management of Action Plans to ensure SMP policies are put into practice	n/a	NWNWCG	ongoing	NWNWCG reports on progress.
8. Interface with Planning and Land Management	8.1	Advise local Planning Authority about SMP policies and flood and erosion risks so they can be accounted for in the next revisions of land use plans in order to help manage residual risks from flooding and erosion.	n/a	ABC	ongoing	Coastal risks considered in land use plans.
	8.2	Advise local Planning Authority about SMP policies and flood and erosion risks so they can take due account in planning decisions and aim to reduce the need to manage flood risk in future.	n/a	ABC	ongoing	Coastal risks considered in planning decisions.
9. Emergency Response	9.1	Development, monitoring and review of emergency response plans to prepare for over design standard events.	n/a	ABC	ongoing	Coastal risks considered in emergency plans.
10. Adaptation/Resilience	10.1	In event strategy study determines need for long term policy change, develop action plan to adapt to coastal change	n/a	ABC	2015	Management of coastal risks.
11. Flood Forecasting and Warning	11.1	Continue with improvements to flood risk maps and inundation modelling to provide improved flood warning service.	EA	EA	ongoing	Management of coastal risks.
12. Environmental Considerations	12.1	Undertake Habitats Regulations Assessment at strategy and/or scheme level.	EA	EA	ongoing	Meet legal requirements.
	12.2	Seek environmental enhancements as part of FRM works at strategy or scheme level and within RHCP e.g. opportunities to improve landscape within Solway Coast AONB	EA	EA	ongoing	Management of coastal risks.
	12.3	Assess the visual and landscape impacts of raising or extending defences at strategy or scheme level on the buffer zone of Hadrian's Wall WHS, in consultation with English Heritage	EH	EH	2010	Management of visual and landscape risks

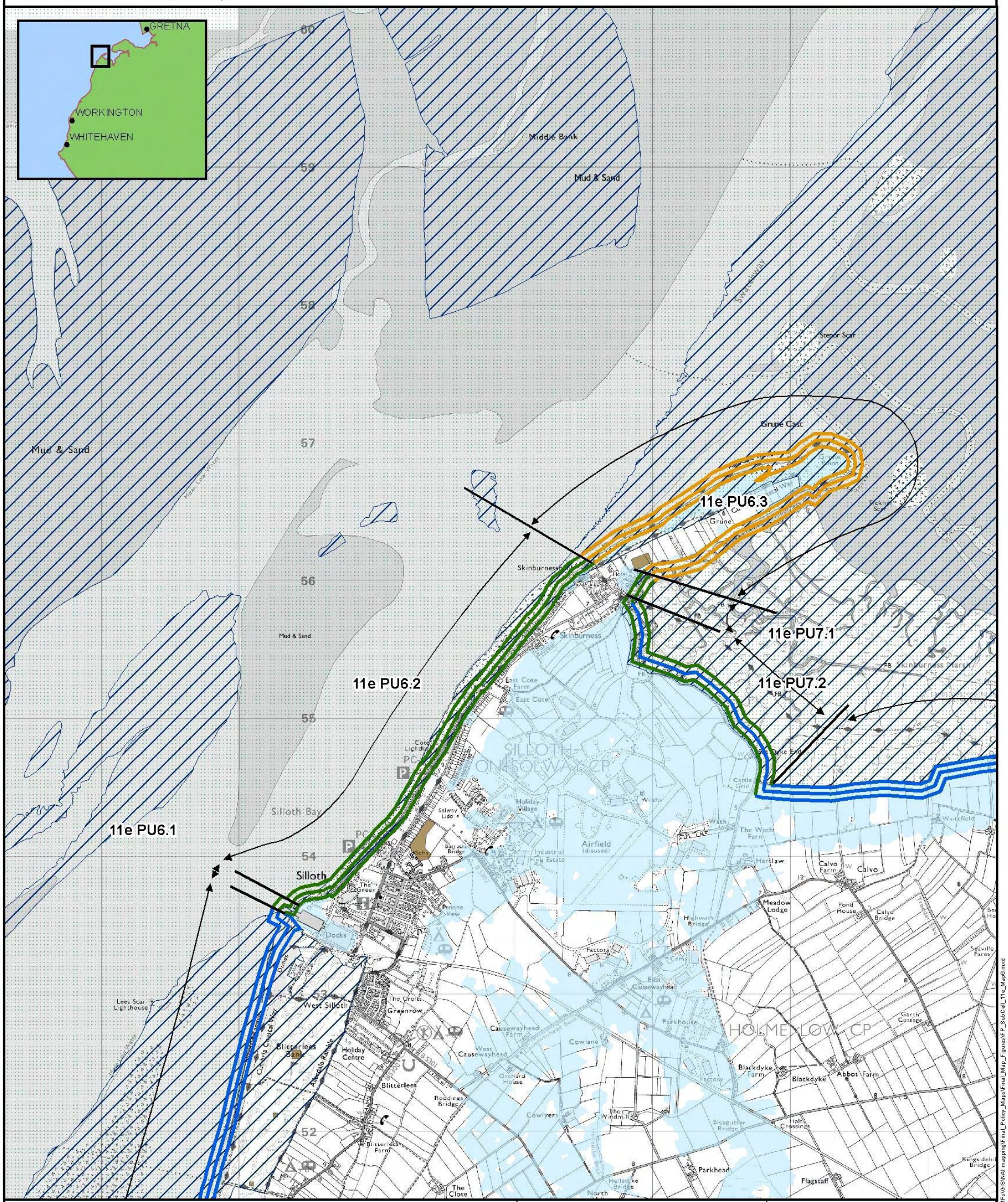
NB Activities from SMP will be carried forward into medium term plans and carried out on a priority basis, subject to funding and approval. n/a = activity is part of authorities general duties, not funded through flood and erosion risk management routes.

ABC = Allerdale Borough Council; Defra = Department of Environment, Food and Rural Affairs; EA = Environment Agency; EH = English Heritage; LO = land owners; NE = Natural England; NR = Network Rail; NWNWCG = North West and North Wales Coastal Group; RHCP = Regional Habitat Creation Programme.

North West England and North Wales Shoreline Management Plan 2

Sub-Cell 11c: Area: 6 Map: 1

North West & North Wales Coastline
a partnership for coastal defence management

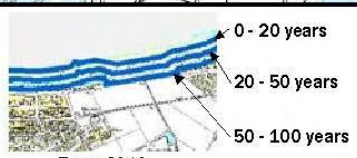


Legend

- National Nature Conservation Designations
- International Nature Conservation Designations
- Scheduled Monuments
- Coastal flood risk area under extreme events, Environment Agency Flood Map, 2008

Shoreline Management Policies

- Hold the Line (HTL)
- Managed Realignment (MR)
- No Active Intervention (NAI)
- Policy Unit Boundary
- Policy Unit Extent



Note that the policy lines on the map show the preferred shoreline management policy for each period and do not represent either the shoreline or defence location

Halcrow

N 0 0.25 0.5 1 Kilometres

Scale: 1:25,000

Boxes showing cumulative erosion estimates represent the expected minimum and maximum erosion distance from the shoreline position in 2010. They are only shown where there is a NAI policy and coastal erosion is the main risk

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