



Ayrshire Shoreline Management Plan

Appendix D: Policy & Actions Assessment

IBE1107/D03

Final

July 2018





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DOCUMENT CONTROL SHEET

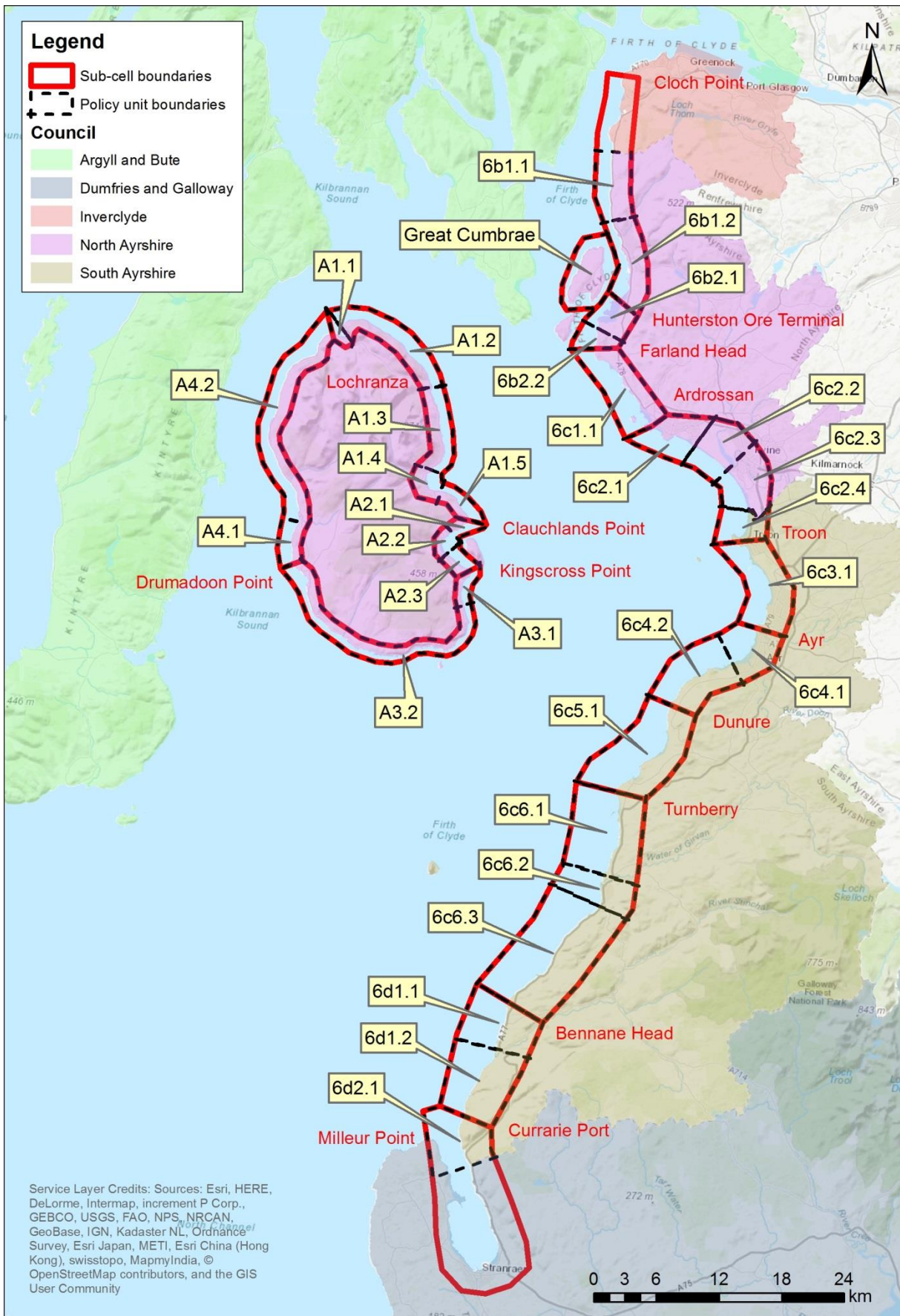
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INTRODUCTION

This Appendix presents an overview of the coastal flood and erosion risk within the various Policy Units identified within the Ayrshire SMP study area, and the outcomes of a series of policy workshops undertaken with Planners and Engineers for both North and South Ayrshire Council. In essence this Appendix documents the process by which the recommended policies were decided and records key issues and considerations that influenced the selection of the relevant policy prior to the finalisation of the draft SMP.

AYRSHIRE SMP STUDY AREA EXTENTS



Long List of Potential Actions to achieve Shoreline Management Policies

Potential Actions	Policies action is applicable for				Risks action is applicable for			Construction Type
	Hold the line	Advance the line	Managed realignment	No active intervention	Tidal Flooding	Wave Overtopping	Erosion	
Seawalls	✓	✓	▲		✓	✓	✓	Hard
Revetments	✓	✓	▲			▲	✓	Hard
Embankments	✓	✓	▲		✓	▲		Hard
Maintenance	✓				▲	▲	▲	Mixed
Groynes	✓						✓	Mixed
Detached breakwaters	✓					▲	✓	Mixed
Headlands	✓					▲	✓	Mixed
Perched beaches	✓						✓	Mixed
Cove	✓						✓	Mixed
Dune stabilisation	✓		▲		✓	▲	✓	Soft
Managed realignment			✓		✓	✓	✓	Soft
Nourishment	✓	▲	✓		▲	▲	✓	Soft
Beach drain	✓						✓	Soft

Key	
Applicable	✓
Applicable in some cases	▲
Not applicable	

Definitions of Long List of Potential Actions

Potential Actions	Definition
Seawalls	These are typically of concrete, masonry or gabion construction. They are typically sloped but can also be near-vertical. The face can be smooth, stepped or curved. Seawalls protect against both erosion and flooding.
Revetments	A sloping structure with a facing of typically stone, concrete units or cobble. Revetments protect against erosion; however they do not normally protect against flooding.
Embankments	A sloping sea defence structure of typically earthen/sand construction. These structures protect the coast from flooding; however they do not normally provide erosion protection.
Maintenance	In areas where coastal defences are currently in place, a maintenance regime can ensure that these structures continue to provide the required standard of protection.
Groynes	These are normally straight structures perpendicular to the shoreline. They block part of the littoral drift and trap sand on their upstream side.
Detached breakwaters	These are straight shore-parallel structures which partly provide direct coastal protection as the shoreline in the lee of the structure is sheltered. Littoral transport in the lee of the structure is also reduced, trapping sand.
Headlands	These are smooth structures which extend out on the shoreface from the coastline. They block part of the littoral transport and have similar effects on the shoreline as groynes and detached breakwaters; however some of the disadvantages of groynes and detached breakwaters are minimised such as leeside erosion.
Perched beaches	These are natural or nourished beaches at locations with a steep shoreface where a submerged structure supports the lower part of the beach.
Cove	This is a semi-protected sandy bay. Two curved breakwaters which connect to the shore are used to form a cove.
Dune stabilisation	Dunes are a natural coastal feature formed by sand which blows inland from the beach and is deposited behind the coastline. Dunes act as a flexible buffer zone, moving backwards with an eroding coastline as long as there is space for this to occur. This process protects the hinterland from erosion and flooding. The ability of dunes to recover after a storm event can be affected if the dune vegetation is damaged. Planting marram grass and setting up spruce fascines or similar to trap sand can stabilise the dune encouraging accretion and build up. This needs to be carried out in a sensitive manner, as over-use of this technique may completely stabilise the dune, interrupting the natural cycle of dune initiation and sediment redistribution.
Managed realignment	In areas where significant coastal defence works have been undertaken, relaxing the requirements for fixing the coastline position to allow managed realignment may be feasible. If housing or infrastructure facilities are very close to the coastline this option will only be feasible if these can be abandoned or moved landward. Where managed realignment is implemented, the coast is given back to natural processes, thereby enhancing the environmental and recreational quality of the area. The rate of realignment can be managed by combining this measure with nourishment if required. If implemented successfully, managed realignment can be effective against both erosion and flooding.
Nourishment	This is a very natural way of combating erosion as sediment is added to artificially replace a deficit in the sediment budget. This measure does not remove the cause of erosion, so erosion will continue to occur along the nourished section. Continual maintenance is required as the nourished sand is gradually sacrificed. This measure generally does not prevent flooding, except in the case of dune nourishment which can offer additional flood protection.
Beach drain	In this system a drain is installed running parallel to the beach in the wave up-rush zone. The drain lowers the groundwater table in this localised area. This decreases the strength of the down-rush of the wave and increases the strength of the beach sand, thereby reducing erosion. This measure does not protect against flooding.

Sub-Cell 6b1: Cloch Point - Hunterston Ore Terminal**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	249	402		0	0	0		0	0	1	<1.0m
RP _s AAD (£)	£98,724										
NRP _s (no.)	78	138		0	0	2		0	0	2	
NRP _s AAD (£)	£201,105										
A Roads (km)	0.837	2.462		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.350	0.468		0.000	0.000	0.025		0.000	0.000	0.062	
Minor Roads (km)	0.129	0.252		0.000	0.046	0.101		0.040	0.020	0.287	
Roads AAD (£)	£14,485										
SSSIs (km ²)	0.275	0.279	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

*Note this sub-cell contains assets located within Inverclyde Council, therefore the sum of the policy units may not total the sub-cell value.

Policy Unit 6b1.1: Skelmorlie to Largs**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£0										
NRP _s (no.)	0	0		0	0	0		0	0	0	
NRP _s AAD (£)	£0										
A Roads (km)	0.298	0.725		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.010		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£6,313										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit 6b1.2: Largs to Hunterston Ore Terminal**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	249	402		0	0	0		0	0	1	<1.0m
RP _s AAD (£)	£98,724										
NRP _s (no.)	75	132		0	0	2		0	0	2	
NRP _s AAD (£)	£32,858										
A Roads (km)	0.530	1.723		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.350	0.468		0.000	0.000	0.025		0.000	0.000	0.062	
Minor Roads (km)	0.123	0.236		0.000	0.046	0.101		0.040	0.020	0.287	
Roads AAD (£)	£8,154										
SSSIs (km ²)	0.275	0.279	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Subcell		Policy unit	
6b1		6b1.1	
Cloch Point - Hunterston Ore Terminal		Skelmorlie to Largs	
Policy			
Hold the line			
Issue			
<p>The A78 road is at risk of coastal flooding. No assets have been identified to be at risk due to coastal erosion in this policy unit, although this may be because the A78 is currently defended and therefore an erosion risk to this asset was not highlighted. The A78 is managed by Transport Scotland. The maximum wave height during a force 8 storm was found to be less than 1.0m.</p>			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against both flooding and erosion	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	▲ Will not protect against flooding but may provide erosion protection	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	✓ Will protect against flooding	Dune stabilisation	✗ No space for dunes
Maintenance	✓ There are existing defences including seawalls, revetments rock armour and groynes.	Managed realignment	✗ Will not hold the existing line
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	✓ Potentially feasible
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✗
Workshop Conclusions			
<p>Significant defences are currently in place so maintenance is a potential action. Lack of erosion detected through NCCA likely to be due to coastline being mostly protected already. Realignment of road may not be practical due to the topography. Transport Scotland to manage risk to their assets. Overtopping study may be required by Transport Scotland.</p>			
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Subcell		Policy unit	
6b1		6b1.2	
Cloch Point - Hunterston Ore Terminal		Largs to Hunterston Ore Terminal	
Policy			
Hold the line			
Issue			
Significant coastal flood risk around the ferry terminal at Largs, the mouth of the Noddsdale Water and Allanton Park Terrace. There are other small pockets of coastal flood risk throughout the policy unit. A number of properties are also at risk due to erosion in the vicinity of Mackerston Place. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against both flooding and erosion	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	▲ Will not protect against flooding but may provide erosion protection	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	✓ Will protect against flooding	Dune stabilisation	✗ No space for dunes
Maintenance	✓ There are existing defences including seawalls, revetments and rock armour.	Managed realignment	✗ Will not hold the existing line
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	✓ Potentially feasible in isolated areas
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✓ Wave overtopping study recommended
Workshop Conclusions			
Many properties potentially affected from flooding but damages relatively low. Wave overtopping study recommended to consider full risk and determine best action. Overtopping risk particularly evident in Largs based on Local Authority feedback. It was noted that groynes, cove and headlands may not be suitable at Largs due to recreational use of area.			

Sub-Cell 6b2: Hunterston Ore Terminal - Farland Head**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	1.0-1.5m
RP _s AAD (£)	£0										
NRPs (no.)	1	1		0	0	0		0	0	0	
NRPs AAD (£)	£1,045										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.042	0.056	0.220		0.151	0.047	0.130	
Roads AAD (£)	£0										
SSSIs (km ²)	0.348	0.400	0.000	0.002	0.001	0.003	0.000	0.002	0.001	0.002	

Policy Unit 6b2.1: Hunterston**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£0										
NRPs (no.)	1	1		0	0	0		0	0	0	
NRPs AAD (£)	£1,045										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.042	0.056	0.220		0.151	0.047	0.130	
Roads AAD (£)	£0										
SSSIs (km ²)	0.264	0.296	0.000	0.002	0.001	0.003	0.000	0.002	0.001	0.002	

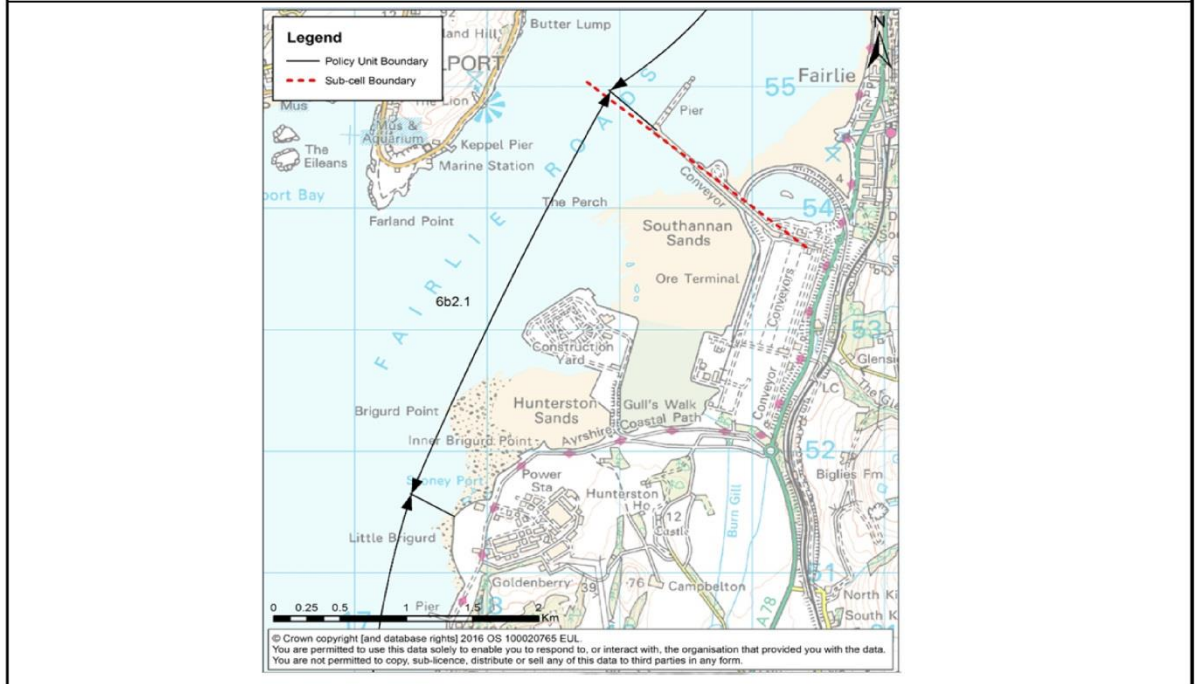
Policy Unit 6b2.2: Hunterston to Farland Head**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	1.0-1.5m
RP _s AAD (£)	£0										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£0										
SSSIs (km ²)	0.084	0.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Subcell		Policy unit	
6b2		6b2.1	
Hunterston Ore Terminal - Farland Head		Hunterston	
Policy			
Advance the line			
Issue			
One Non-residential property (NRP) at risk of coastal flooding at Hunterston construction yard. A localised area of minor road is at risk due to coastal erosion close to the power station. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against both flooding and erosion	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	✓ Will not protect against flooding but may provide erosion protection	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	✓ Will not protect against erosion but may provide flood protection	Dune stabilisation	▲ Will not protect against flooding but may provide erosion protection
Maintenance	▲ There are existing defences including rock armour revetments. Maintaining the existing defences will not advance the line	Managed realignment	✗ Will not advance the line
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	▲ May be required in conjunction with hard shoreline reinforcement such as seawalls
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✗

Workshop Conclusions

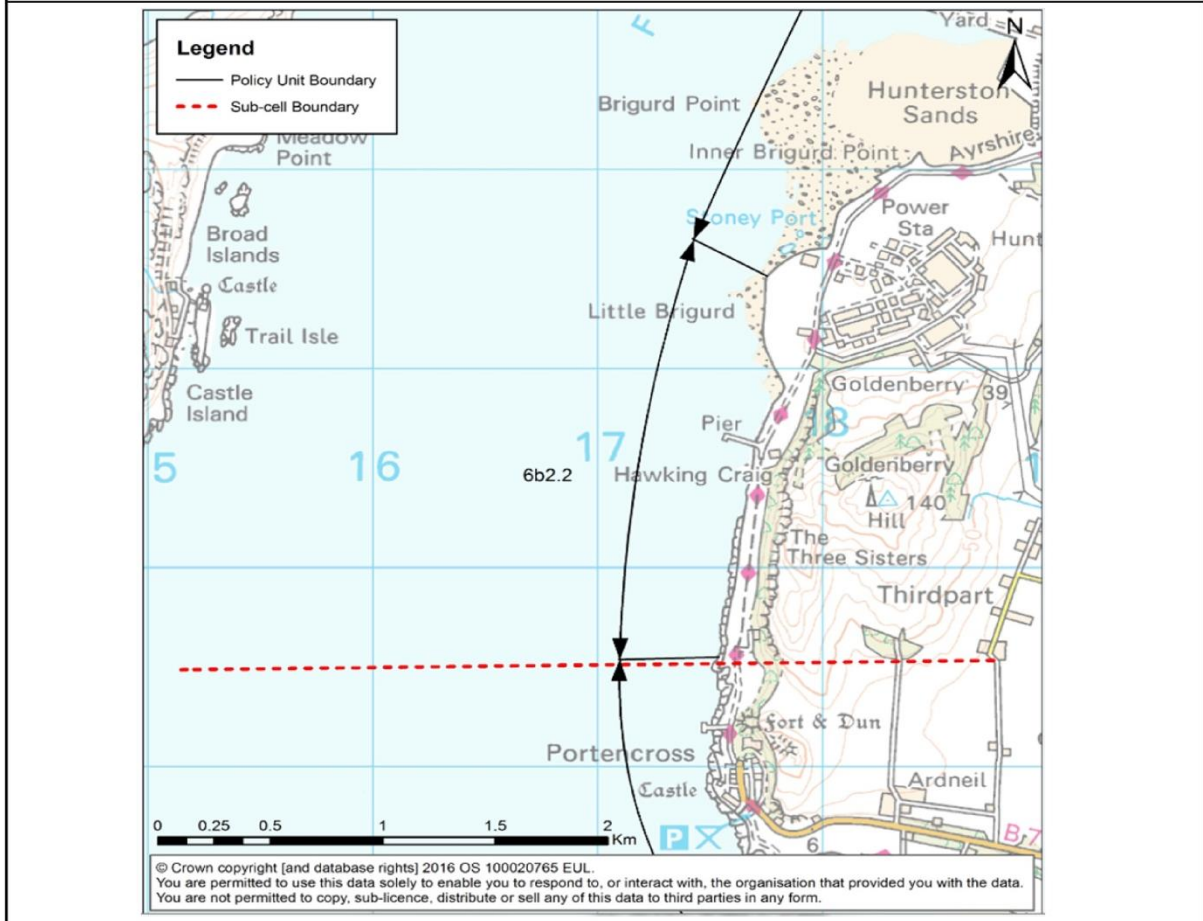
Hunterston is a Strategic Site under the National Planning Framework. Policy under the National Policy Framework is to not constrain development in this area. Actions will be the responsibility of the asset owners.



Subcell		Policy unit	
6b2		6b2.2	
Hunterston Ore Terminal - Farland Head		Hunterston to Farland Head	
Policy			
Hold the line			
Issue			
No assets have been identified to be at risk due to coastal flooding or erosion in this policy unit. The maximum wave height during a force 8 storm was found to be between 1.0-1.5m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✗ No flood or erosion risk identified	Perched beaches	✗ No erosion risk identified
Revetments	✗ No erosion risk identified	Cove	✗ No erosion risk identified
Embankments	✗ No flood risk identified	Dune stabilisation	✗ No flood or erosion risk identified
Maintenance	✓ There are existing defences including rock armour revetments.	Managed realignment	✗ Will not hold the existing line
Groynes	✗ No erosion risk identified	Nourishment	✗ No flood or erosion risk identified
Detached breakwaters	✗ No erosion risk identified	Beach drain	✗ No erosion risk identified
Headlands	✗ No erosion risk identified	Additional Actions	✗

Workshop Conclusions

Maintenance of the shoreline will be the responsibility of the asset owners.



Sub-Cell 6c1: Farland Head - Ardrossan**RISKS**

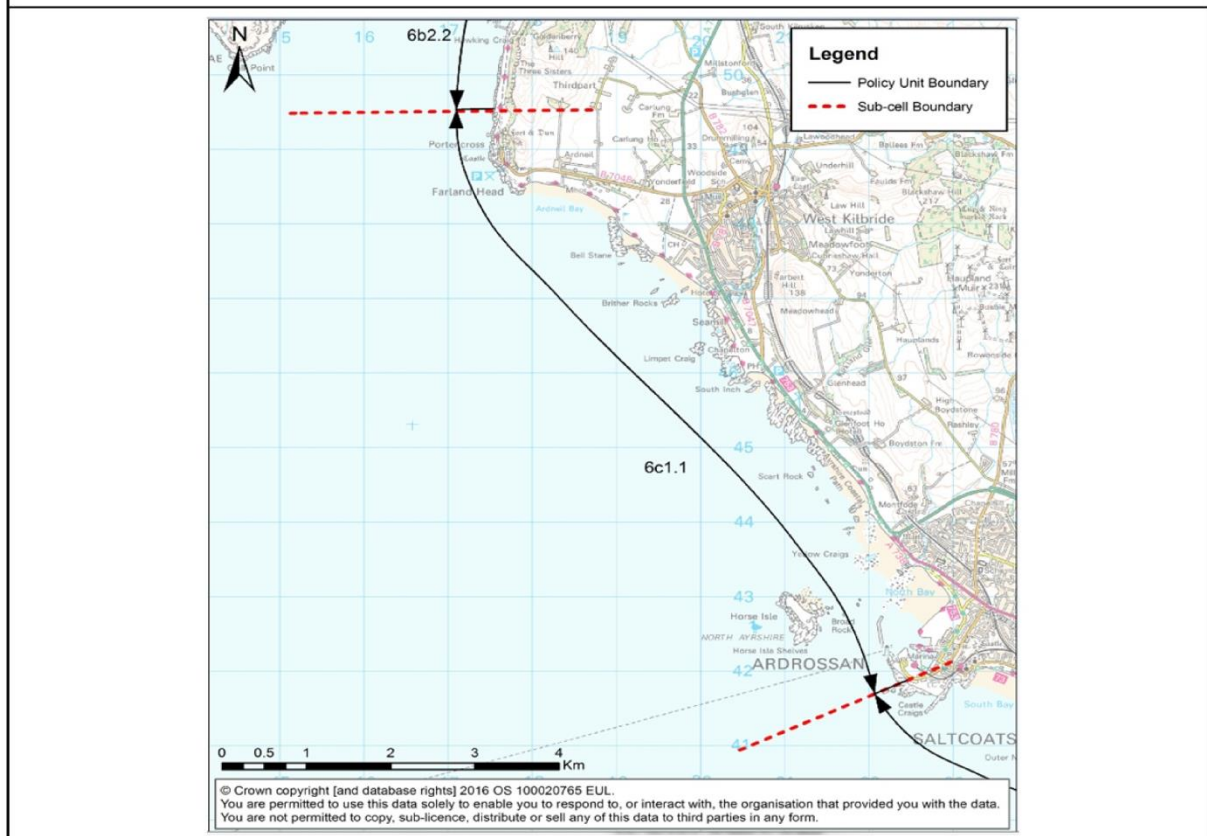
Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	1	326		0	0	0		0	0	0	1.5-2.0m
RPs AAD (£)	£3,780										
NRPs (no.)	5	75		0	0	0		0	0	0	
NRPs AAD (£)	£4,369										
A Roads (km)	0.000	0.190		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.021	0.414		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.080	1.370		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£572										
SSSIs (km²)	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit 6c1.1 (Farland Head to Ardrossan) is the only policy unit within this sub-cell, therefore the policy unit risk values are equal to the sub-cell risk values.

Subcell		Policy unit			
6c1		6c1.1			
Farland Head - Ardrossan		Farland Head to Ardrossan			
Policy					
Hold the line					
Issue					
A number of properties are at risk of coastal flooding in the vicinity of Portencross Castle, along Eglinton Road and at Ardrossan Marina. No assets were found to be at risk due to coastal erosion. Risk to Scottish Water assets. The maximum wave height during a force 8 storm was found to be between 1.5-2.0m. Wave overtopping risk to Ardrossan.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	✓	Will protect against flooding	Perched beaches	✗	Will not protect against flooding
Revetments	✗	Will not protect against flooding	Cove	✗	Will not protect against flooding
Embankments	✓	Will protect against flooding	Dune stabilisation	✓	Potentially feasible at Eglinton Road
Maintenance	✓	There are existing defences including seawalls, revetments, rock armour and dunes	Managed realignment	✗	Will not hold the existing line
Groynes	✗	Will not protect against flooding	Nourishment	✓	Potentially feasible at Eglinton Road
Detached breakwaters	✓	May provide protection to the marina	Beach drain	✗	Will not protect against flooding
Headlands	✗	Will not protect against flooding	Additional Actions	✓	Wave overtopping study recommended

Workshop Conclusions

Planning application currently in for North Bay which could provide 200yr plus climate change standard of protection against coastal flooding. Scottish Water to manage risk to their assets.



Sub-Cell 6c2: Ardrossan - Troon**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	134	707		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£71,206										
NRPs (no.)	118	308		0	0	1		0	0	1	
NRPs AAD (£)	£224,240										
A Roads (km)	0.511	0.246		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.746	2.323		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.249	0.881		0.000	0.000	0.000		0.000	0.000	0.273	
Roads Damage (£)	£14,267										
SSSIs (km ²)	1.101	1.253	0.011	0.000	0.000	0.000	0.011	0.000	0.000	0.000	

Policy Unit 6c2.1: Ardrossan to Stevenston**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	13	382		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£26,167										
NRPs (no.)	1	161		0	0	1		0	0	1	
NRPs AAD (£)	£10,592										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.744		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.515		0.000	0.000	0.000		0.000	0.000	0.273	
Roads Damage (£)	£397										
SSSIs (km ²)	0.062	0.063	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	

Policy Unit 6c2.2: Stevenston to Irvine Bay**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£0										
NRPs (no.)	3	3		0	0	0		0	0	0	
NRPs AAD (£)	£2,822										
A Roads (km)	0.019	0.477		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.257	0.382		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£1,706										
SSSIs (km ²)	0.829	0.961	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit 6c2.3: Irvine Bay to Gales Burn**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	10	84		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£6,859										
NRPs (no.)	11	18		0	0	0		0	0	0	
NRPs AAD (£)	£192,426										
A Roads (km)	0.253	0.276		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.005	0.031		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£7,307										
SSSIs (km ²)	0.211	0.229	0.006	0.000	0.000	0.000	0.006	0.000	0.000	0.000	

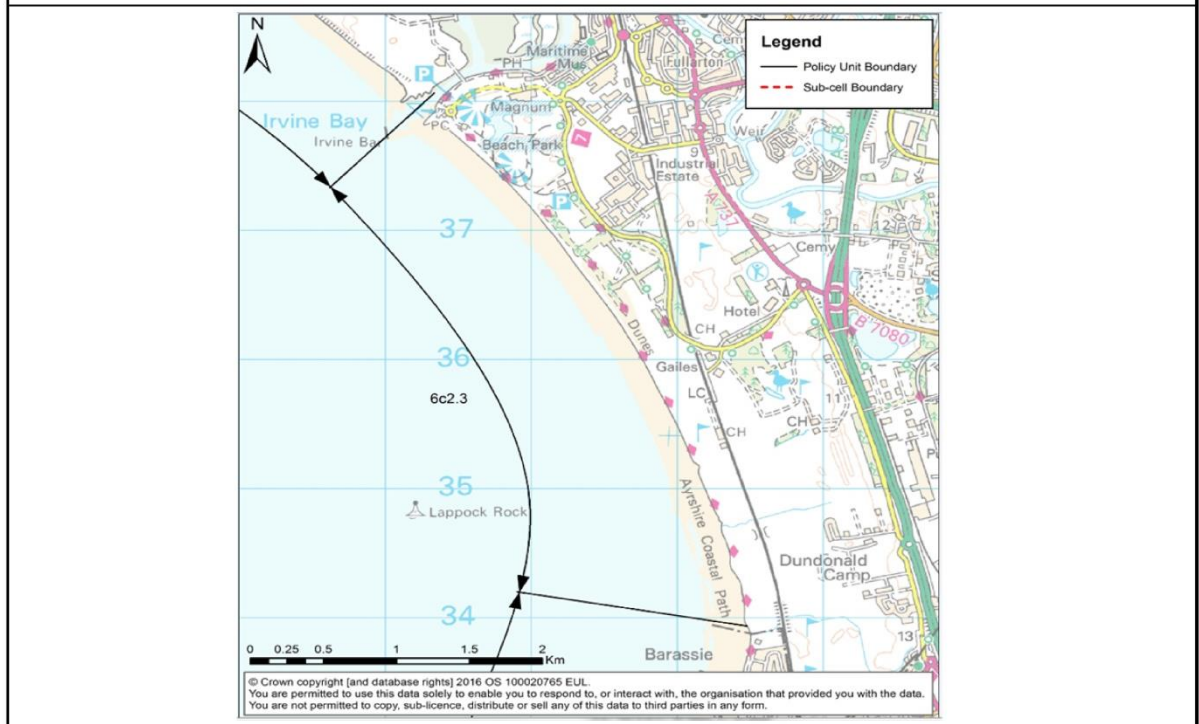
Policy Unit 6c2.4: Gales Burn to Troon**RISKS**


Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	111	241		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£38,181										
NRPs (no.)	103	126		0	0	0		0	0	0	
NRPs AAD (£)	£18,401										
A Roads (km)	0.238	0.246		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.484	1.579		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.249	0.366		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£4,857										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Subcell		Policy unit	
6c2		6c2.1	
Ardrossan - Troon		Ardrossan to Stevenston	
Policy			
Hold the line			
Issue			
Significant coastal flood risk adjacent at Canal Crescent (Stevenston). Potential flood risk to rail line at Saltcoats. Significant additional coastal flood risk at Saltcoats and Stevenston during climate change scenario. One NRP is at risk due to coastal erosion at Stevenston beach. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against both flooding and erosion	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	▲ Will not protect against flooding but may provide erosion protection	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	▲ Will not protect against erosion but may provide flooding protection	Dune stabilisation	✓ Potentially feasible, especially at Stevenston beach
Maintenance	✓ There are existing defences including seawalls, revetments, rock armour and dunes	Managed realignment	✗ Will not hold the existing line
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	✓ Potentially feasible in isolated areas
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✗
Workshop Conclusions			
Soft engineering action preferred to manage erosion at Stevenston. Actions will be the responsibility of the asset owner. Network Rail to manage risk to their assets.			
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Subcell		Policy unit	
6c2		6c2.2	
Ardrossan - Troon		Stevenston to Irvine Bay	
Policy			
Hold the line			
Issue			
Isolated areas of coastal flood risk adjacent to the River Irvine affecting three NRPs. No assets have been identified to be at risk due to coastal erosion, however unknown materials are present along the shoreline and there is potential for contamination if future erosion was to occur. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against both flooding and erosion	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	▲ Will not protect against flooding but may provide erosion protection	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	▲ Will not protect against erosion but may provide flooding protection	Dune stabilisation	✓ Potentially feasible
Maintenance	✓ There are existing defences including seawalls, revetments, rock armour and dunes	Managed realignment	✗ Will not hold the existing line
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	✓ Potentially feasible in isolated areas
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✗
Workshop Conclusions			
Unknown materials are present at the site along this section of shoreline. Potential for contamination, so erosion protection is required.			

Subcell		Policy unit			
6c2		6c2.3			
Ardrossan - Troon		Irvine Bay to Gailles Burn			
Policy					
Hold the line					
Issue					
Significant coastal flood risk adjacent to the River Irvine. No assets were identified as being at risk due to coastal erosion, however Local Authorities indicate there is significant loss of sand dune at Barassie. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	✓	Will protect against both flooding and erosion	Perched beaches	▲	Will not protect against flooding but may provide erosion protection
Revetments	▲	Will not protect against flooding but may provide erosion protection	Cove	▲	Will not protect against flooding but may provide erosion protection
Embankments	▲	Will not protect against erosion but may provide flooding protection	Dune stabilisation	✓	Potentially feasible
Maintenance	✓	There are existing defences including seawalls, revetments, rock armour and dunes	Managed realignment	✗	Will not hold the existing line
Groynes	▲	Will not protect against flooding but may provide erosion protection	Nourishment	✓	Potentially feasible in isolated areas
Detached breakwaters	▲	Will not protect against flooding but may provide erosion protection	Beach drain	▲	Will not protect against flooding but may provide erosion protection
Headlands	▲	Will not protect against flooding but may provide erosion protection	Additional Actions	✗	
Workshop Conclusions					
Dune management recommended at Barassie/Irvine beach park to manage erosion. Hard engineering actions may be required along the river Irvine to manage flooding.					



Subcell		Policy unit	
6c2		6c2.4	
Ardrossan - Troon		Gailes Burn to Troon	
Policy			
Hold the line			
Issue			
Significant coastal flood risk in the vicinity of Portland St (Troon). No assets have been identified to be at risk due to coastal erosion in this policy unit. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against flooding	Perched beaches	✗ Will not protect against flooding
Revetments	✗ Will not protect against flooding	Cove	✗ Will not protect against flooding
Embankments	✓ Will protect against flooding	Dune stabilisation	✓ Potentially feasible
Maintenance	✓ There are existing defences including seawalls, rock armour and dunes	Managed realignment	✗ Will not hold the existing line
Groynes	✗ Will not protect against flooding	Nourishment	✓ Potentially feasible
Detached breakwaters	✗ Will not protect against flooding	Beach drain	✗ Will not protect against flooding
Headlands	✗ Will not protect against flooding	Additional Actions	✓ Wave overtopping study recommended
Workshop Conclusions			
Seawalls, embankments and maintenance at Troon. Dune stabilisation or maintenance at North Sands, Barassie and Troon North Beach. South Ayrshire Council currently do dune restoration work in the area. Groynes, detached breakwaters or headlands are not socially acceptable at Troon North Beach as these measures would impact upon the recreational use of the beach. Wave overtopping study recommended to assess risk to Portland St.			
			

Sub-Cell 6c3: Troon - Ayr**RISKS**

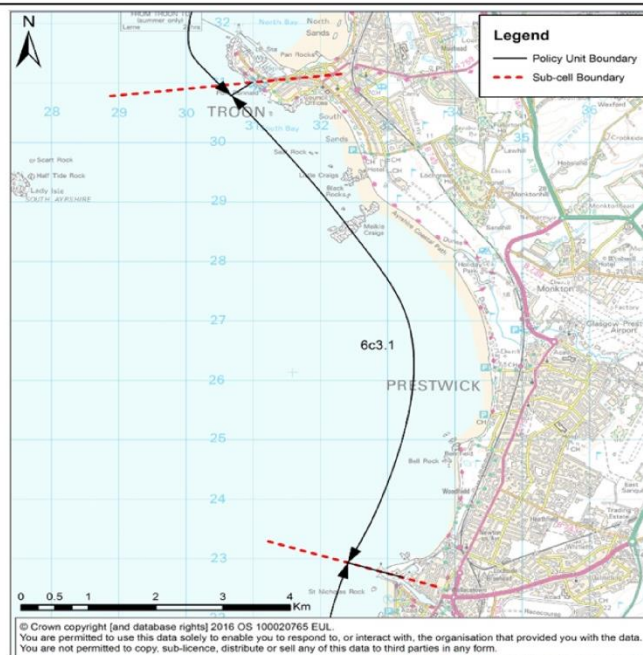
Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	317	669		0	0	0		0	0	0	<1.0m
RPs AAD (£)	£114,471										
NRPs (no.)	264	375		0	0	0		0	0	0	
NRPs AAD (£)	£60,772										
A Roads (km)	0.298	0.299		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.230	0.989		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.240	0.340		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£2,345										
SSSIs (km²)	0.041	0.067	0.008	0.000	0.000	0.000	0.008	0.000	0.000	0.000	

Policy Unit 6c3.1 (Troon to Ayr) is the only policy unit within this sub-cell, therefore the policy unit risk values are equal to the sub-cell risk values.

Subcell		Policy unit			
6c3		6c3.1			
Troon - Ayr		Troon to Ayr			
Policy					
Hold the line					
Issue					
Significant coastal flood risk around West Portland St (Troon), Prestwick beach and York St (Ayr). Erosion at Newton shore, area of fill material needs protected. Scottish Water rising main runs along the shore and needs protected or moved. Local Authorities have indicated Titchfield Road and adjacent property gardens have flooded in the past due to wave overtopping. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	✓	Will protect against flooding and erosion	Perched beaches	▲	Will not protect against flooding but may provide erosion protection
Revetments	✓	Will protect against erosion	Cove	▲	Will not protect against flooding but may provide erosion protection
Embankments	✓	Will protect against flooding	Dune stabilisation	✗	Properties at risk either have no space for dunes or have existing seawall defences in front of them
Maintenance	✓	There are existing defences including seawalls, revetments, rock armour and dunes	Managed realignment	✗	Will not hold the existing line
Groynes	▲	Will not protect against flooding but may provide erosion protection	Nourishment	✓	Potentially feasible to protect the SW asset
Detached breakwaters	▲	Will not protect against flooding but may provide erosion protection	Beach drain	▲	Will not protect against flooding but may provide erosion protection
Headlands	▲	Will not protect against flooding but may provide erosion protection	Additional Actions	✓	Wave overtopping study recommended

Workshop Conclusions

Revetments a potential option to protect against erosion at Newton shore. Scottish Water to manage risk to their asset and could consider nourishment as a potential option. Wave overtopping study including Titchfield Road recommended.



Sub-Cell 6c4: Ayr - Dunure**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	173	575		0	0	0		0	0	0	1.5-2.0m
RP _s AAD (£)	£143,844										
NRP _s (no.)	26	59		0	0	0		0	0	0	
NRP _s AAD (£)	£27,936										
A Roads (km)	0.397	0.496		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.101		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.203	1.010		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£8,209										
SSSIs (km ²)	0.062	0.070	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	

Policy Unit 6c4.1: Ayr to Greenan Castle**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	173	575		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£143,844										
NRP _s (no.)	24	57		0	0	0		0	0	0	
NRP _s AAD (£)	£14,353										
A Roads (km)	0.397	0.496		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.101		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.203	1.010		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£8,209										
SSSIs (km ²)	0.013	0.014	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	

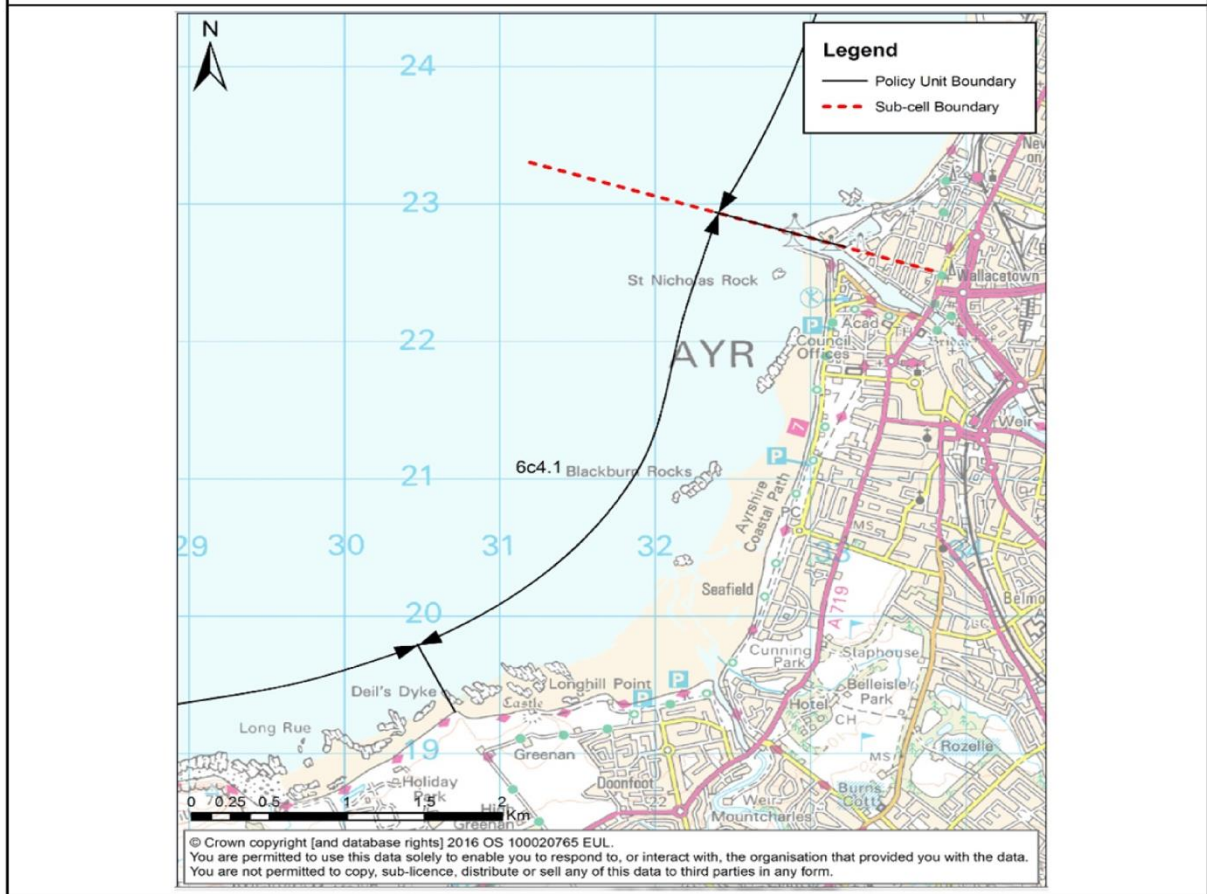
Policy Unit 6c4.2: Greenan Castle to Dunure**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	1.5-2.0m
RP _s AAD (£)	£0										
NRP _s (no.)	2	2		0	0	0		0	0	0	
NRP _s AAD (£)	£13,583										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£0										
SSSIs (km ²)	0.049	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Subcell		Policy unit	
6c4		6c4.1	
Ayr - Dunure		Ayr to Greenan Castle	
Policy			
Hold the line			
Issue			
Significant coastal flood risk at River St (Ayr), Westfield Rd/Clarke Avenue/Arrol Dr (Seafield) and Gearholm Rd/Goukscroft Park (Doonfoot). No assets have been identified to be at risk due to erosion. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against flooding	Perched beaches	✗ Will not protect against flooding
Revetments	✗ Will not protect against flooding	Cove	✗ Will not protect against flooding
Embankments	✓ Will protect against flooding	Dune stabilisation	✓ Potentially feasible at Seafield
Maintenance	✓ There are existing defences including seawalls, revetments, rock armour, dunes and the south pier.	Managed realignment	✗ Will not hold the existing line
Groynes	✗ Will not protect against flooding	Nourishment	✓ Potentially feasible at Seafield
Detached breakwaters	✗ Will not protect against flooding	Beach drain	✗ Will not protect against flooding
Headlands	✗ Will not protect against flooding	Additional Actions	✓ Wave overtopping study recommended

Workshop Conclusions

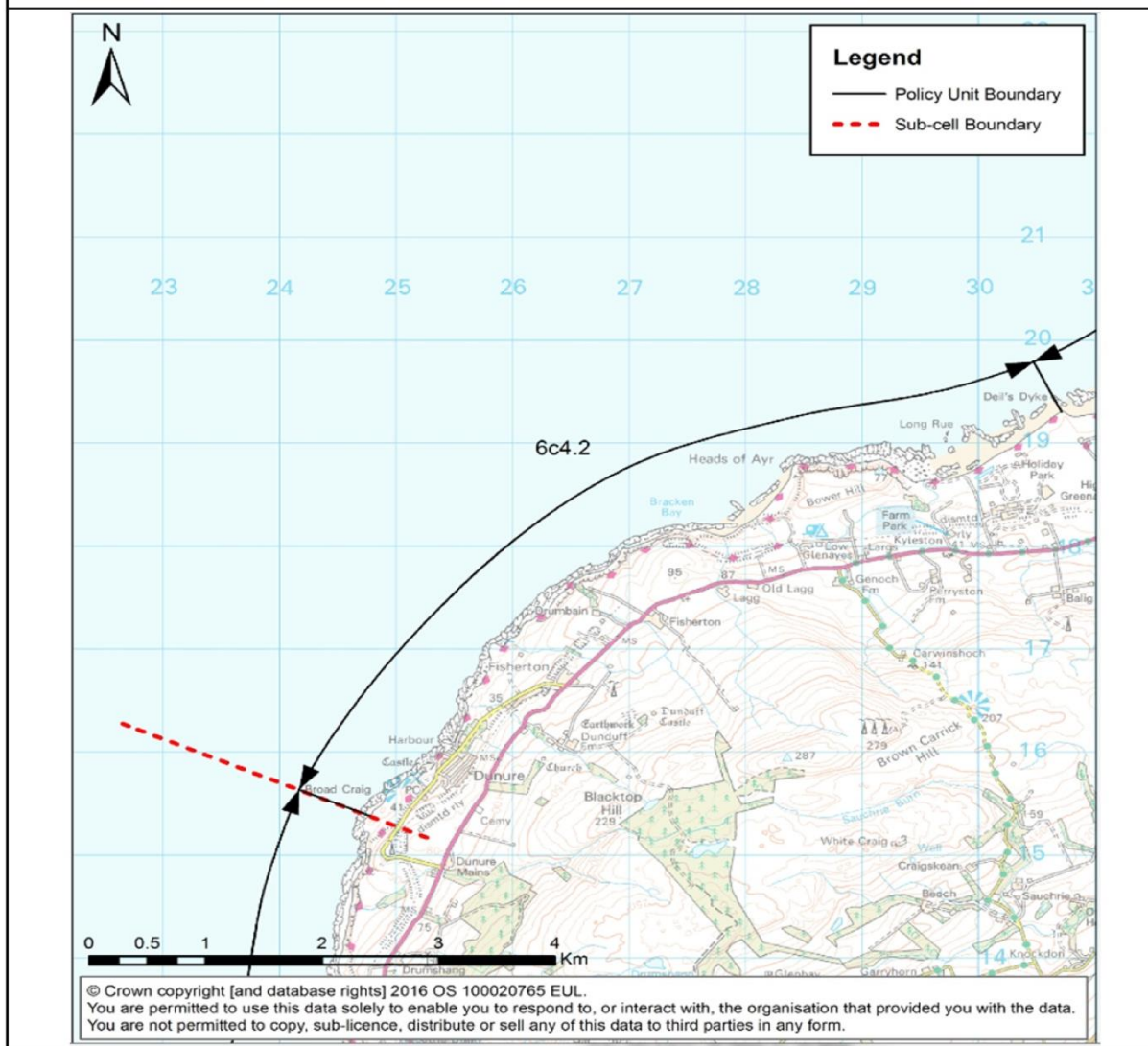
Maintenance of the South Pier was suggested due to its importance in maintaining the port at Ayr. A wave overtopping study along the promenade at south Ayr town was recommended. The policy unit boundary was adjusted to include Greenan Castle within the hold the line policy.



Subcell		Policy unit			
6c4		6c4.2			
Ayr - Dunure		Greenan Castle to Dunure			
Policy					
No active intervention					
Issue					
Two NRPs at coastal flood risk at Dunure. No assets have been identified to be at risk due to erosion. The maximum wave height during a force 8 storm was found to be between 1.5-2.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	x	N/A	Perched beaches	x	N/A
Revetments	x	N/A	Cove	x	N/A
Embankments	x	N/A	Dune stabilisation	x	N/A
Maintenance	x	N/A	Managed realignment	x	N/A
Groynes	x	N/A	Nourishment	x	N/A
Detached breakwaters	x	N/A	Beach drain	x	N/A
Headlands	x	N/A	Additional Actions	x	

Workshop Conclusions

The policy was agreed with no amendments. No active intervention



Sub-Cell 6c5: Dunure - Turnberry**RISKS**

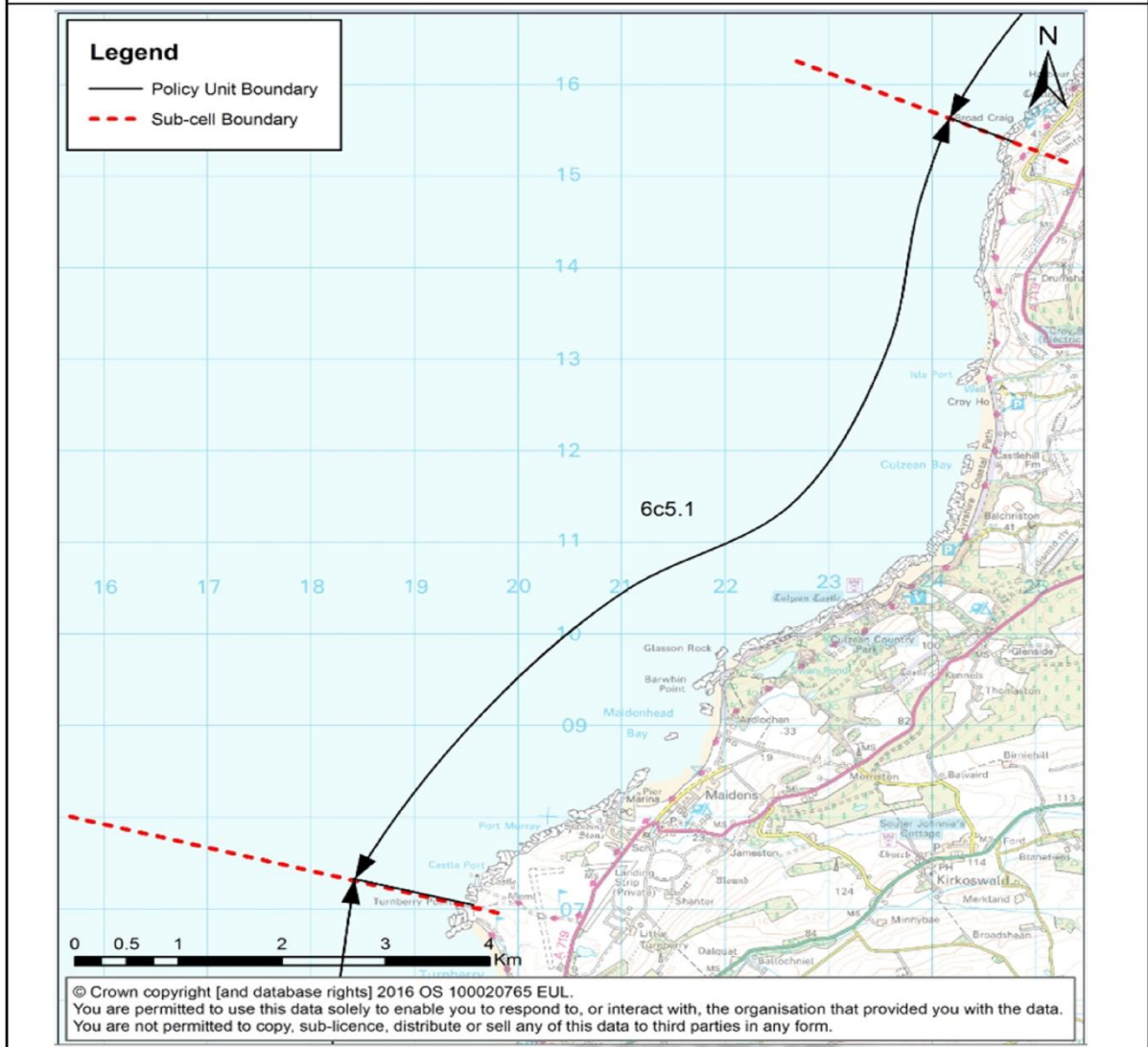
Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	1	1		0	0	0		0	0	0	1.5-2.0m
RPs AAD (£)	£7,785										
NRPs (no.)	2	5		0	0	0		0	0	0	
NRPs AAD (£)	£1,143										
A Roads (km)	0.000	0.015		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.014	0.093		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£225										
SSSIs (km²)	0.056	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit 6c5.1 (Dunure to Turnberry) is the only policy unit within this sub-cell, therefore the policy unit risk values are equal to the sub-cell risk values.

Subcell		Policy unit			
6c5		6c5.1			
Dunure - Turnberry		Dunure to Turnberry			
Policy					
No active intervention					
Issue					
Isolated areas of coastal flood risk have been identified at Maidenhead Bay and Turnberry lighthouse. The maximum wave height during a force 8 storm was found to be between 1.5-2.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	x	N/A	Perched beaches	x	N/A
Revetments	x	N/A	Cove	x	N/A
Embankments	x	N/A	Dune stabilisation	x	N/A
Maintenance	x	N/A	Managed realignment	x	N/A
Groynes	x	N/A	Nourishment	x	N/A
Detached breakwaters	x	N/A	Beach drain	x	N/A
Headlands	x	N/A	Additional Actions	x	

Workshop Conclusions

The policy was agreed with no amendments. This section of coastline is potentially important as a sediment source.



Sub-Cell 6c6: Turnberry - Bennane Head**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	8	15		0	0	0		0	0	0	1.5-2.0m
RP _s AAD (£)	£9,190										
NRPs (no.)	13	22		0	0	0		0	0	0	
NRPs AAD (£)	£4,153										
A Roads (km)	0.240	0.473		0.000	0.051	0.115		0.048	0.021	0.101	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.088	0.192		0.000	0.000	0.107		0.030	0.011	0.073	
Roads AAD (£)	£6,257										
SSSIs (km ²)	0.268	0.292	0.002	0.001	0.001	0.003	0.002	0.001	0.001	0.003	

Policy Unit 6c6.1: Turnberry to North Girvan**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	1	2		0	0	0		0	0	0	1.5-2.0m
RP _s AAD (£)	£692										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.020	0.020		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£705										
SSSIs (km ²)	0.059	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit 6c6.2: Girvan**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	7	13		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£8,498										
NRPs (no.)	13	21		0	0	0		0	0	0	
NRPs AAD (£)	£4,153										
A Roads (km)	0.034	0.119		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.088	0.191		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£1,184										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit 6c6.3: South Girvan to Bennane Head

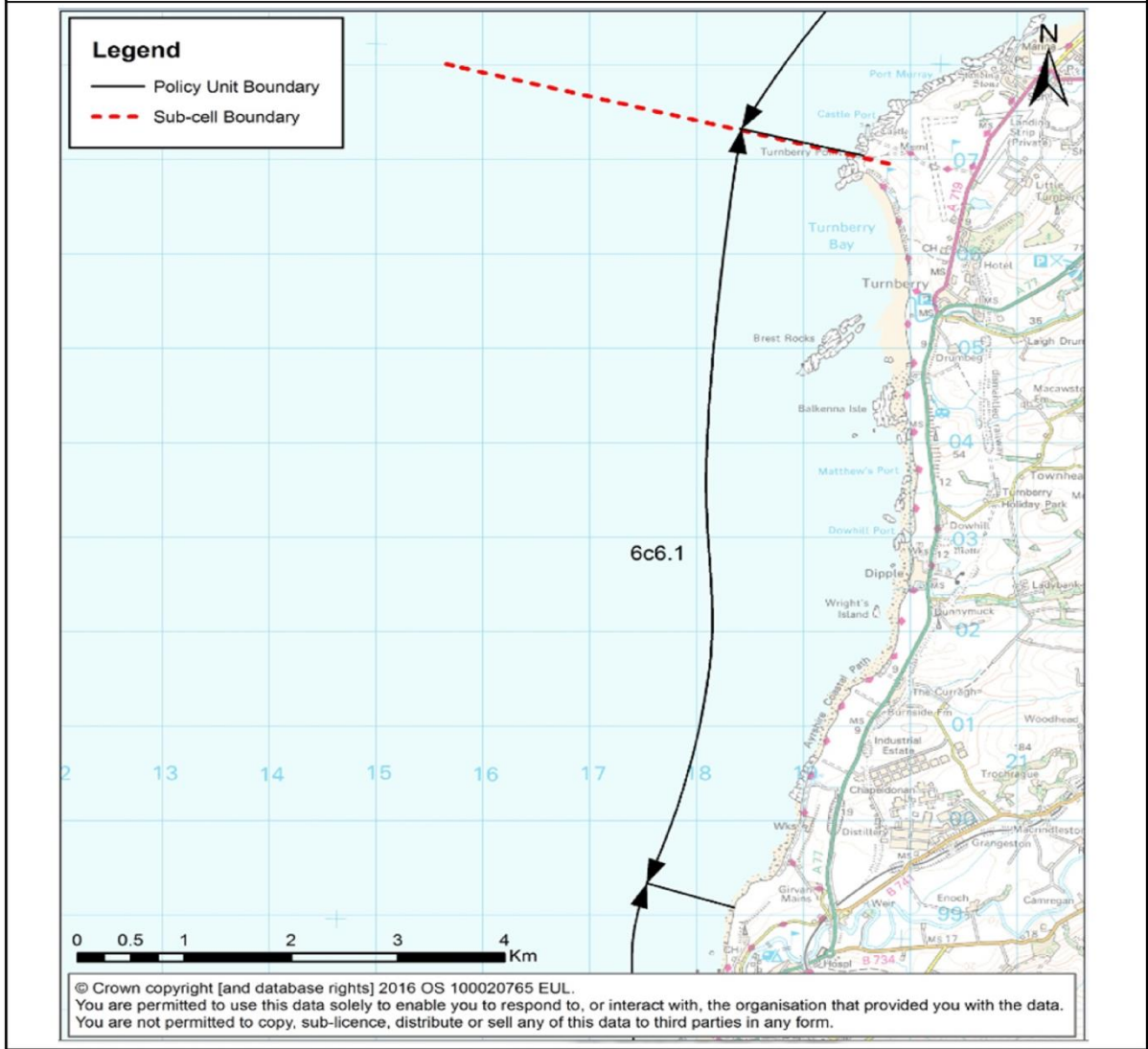
RISKS


Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	0	0		0	0	0		0	0	0	<1.0m
RPs AAD (£)	£0										
NRPs (no.)	0	1		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.186	0.334		0.000	0.051	0.115		0.048	0.021	0.101	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.001		0.000	0.000	0.107		0.030	0.011	0.073	
Roads AAD (£)	£4,368										
SSSIs (km²)	0.209	0.225	0.002	0.001	0.001	0.003	0.002	0.001	0.001	0.003	

Subcell		Policy unit			
6c6		6c6.1			
Turnberry - Bennane Head		Turnberry to North Girvan			
Policy					
No active intervention					
Issue					
Isolated coastal flood risk identified to a single residential property (RP) at Dipple. There is potential for erosion of agricultural land but risk is low. The maximum wave height during a force 8 storm was found to be between 1.5-2.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	x	N/A	Perched beaches	x	N/A
Revetments	x	N/A	Cove	x	N/A
Embankments	x	N/A	Dune stabilisation	x	N/A
Maintenance	x	N/A	Managed realignment	x	N/A
Groynes	x	N/A	Nourishment	x	N/A
Detached breakwaters	x	N/A	Beach drain	x	N/A
Headlands	x	N/A	Additional Actions	x	

Workshop Conclusions

The policy was agreed with no amendments. This section of coastline is potentially important as a sediment source.

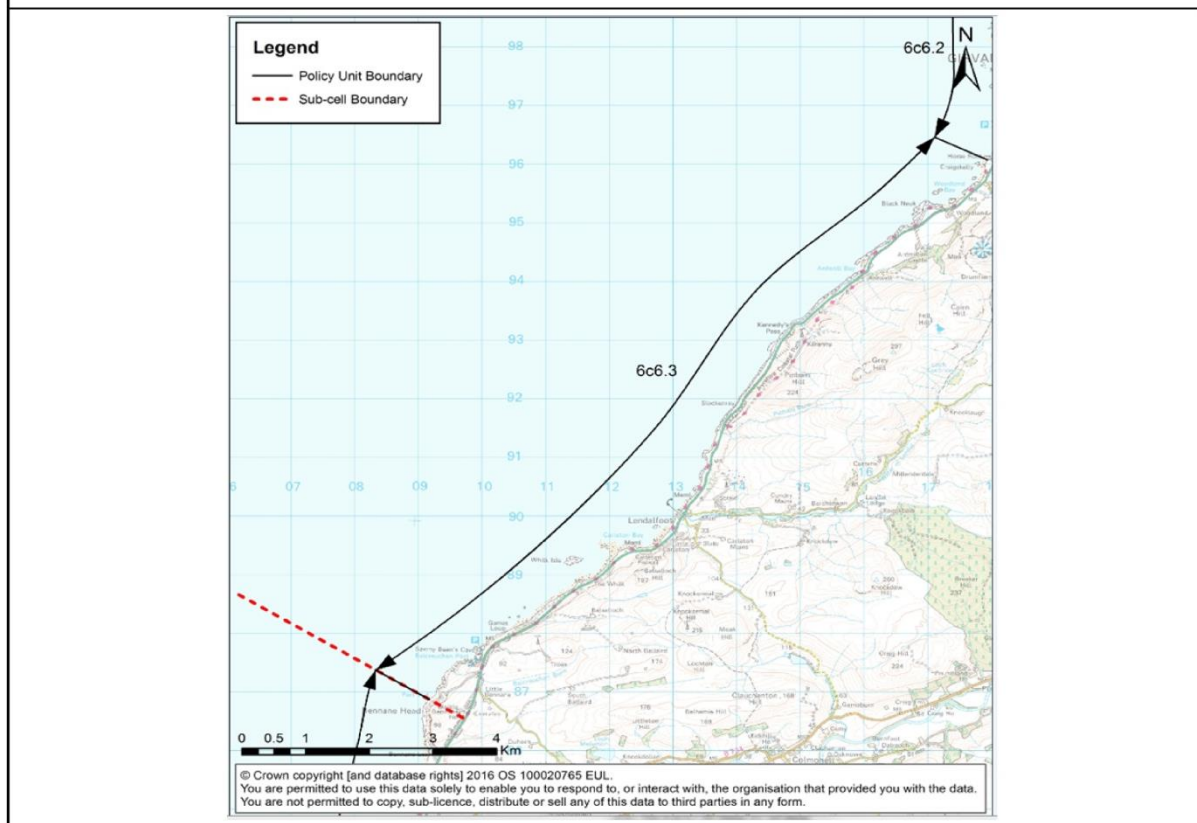


Subcell		Policy unit	
6c6		6c6.2	
Turnberry - Bennane Head		Girvan	
Policy			
Hold the line			
Issue			
Significant coastal flood risk adjacent to the Water of Girvan and A77. Significant joint fluvial and coastal flood risk with the Water of Girvan and Mill Burn. Erosion risk at Girvan golf course. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against flooding	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	✓ Will protect against erosion	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	✓ Will protect against flooding	Dune stabilisation	✓ Potentially feasible at Girvan golf club
Maintenance	✓ There are existing defences including harbour walls, seawalls, revetments and rock armour	Managed realignment	✗ Will not hold the existing line
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	✓ Potentially feasible at Girvan golf club
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✓ Flood study at Girvan golf course
Workshop Conclusions			
Girvan golf course erosion may be partially protected by golf club intervention but may require more formal protection to hold the line. Water of Girvan harbour regularly needs dredged due to sedimentation. Potential to use dredged material for nourishment.			
			

Subcell		Policy unit			
6c6		6c6.3			
Turnberry - Bennane Head		South Girvan to Bennane Head			
Policy					
Hold the line					
Issue					
Isolated areas of the A77 were found to be at risk of coastal flooding. The A77 at Woodland Bay Hotel was also found to be at risk due to erosion. The A77 is managed by Transport Scotland. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	✓	Will protect against flooding and erosion	Perched beaches	▲	Will not protect against flooding but may provide erosion protection
Revetments	▲	Will not protect against flooding but may provide erosion protection	Cove	▲	Will not protect against flooding but may provide erosion protection
Embankments	✓	Will protect against flooding	Dune stabilisation	✗	Not suitable for this policy unit.
Maintenance	✓	The A77 is mostly defended currently	Managed realignment	▲	Potentially feasible if the road can be diverted
Groynes	▲	Will not protect against flooding but may provide erosion protection	Nourishment	▲	Potentially feasible
Detached breakwaters	▲	Will not protect against flooding but may provide erosion protection	Beach drain	▲	Will not protect against flooding but may provide erosion protection
Headlands	▲	Will not protect against flooding but may provide erosion protection	Additional Actions	✗	

Workshop Conclusions

Significant defences are currently in place so maintenance is a potential action. Managed realignment is also a potential option if the road can be diverted. Transport Scotland to manage risk to their asset.



Sub-Cell 6d1: Bennane Head - Currarie Port**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	1	1.5-2.0m
RP _s AAD (£)	£0										
NRPs (no.)	1	1		0	0	0		0	0	0	
NRPs AAD (£)	£1,045										
A Roads (km)	0.035	0.047		0.000	0.000	0.477		0.000	0.035	0.531	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.026		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£1,133										
SSSIs (km ²)	0.202	0.216	0.002	0.000	0.000	0.000	0.002	0.000	0.000	0.000	

Policy Unit 6d1.1: Bennane Head to Ballantrae**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	1	1.0-1.5m
RP _s AAD (£)	£0										
NRPs (no.)	1	1		0	0	0		0	0	0	
NRPs AAD (£)	£1,045										
A Roads (km)	0.035	0.047		0.000	0.000	0.477		0.000	0.035	0.531	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£1,133										
SSSIs (km ²)	0.038	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

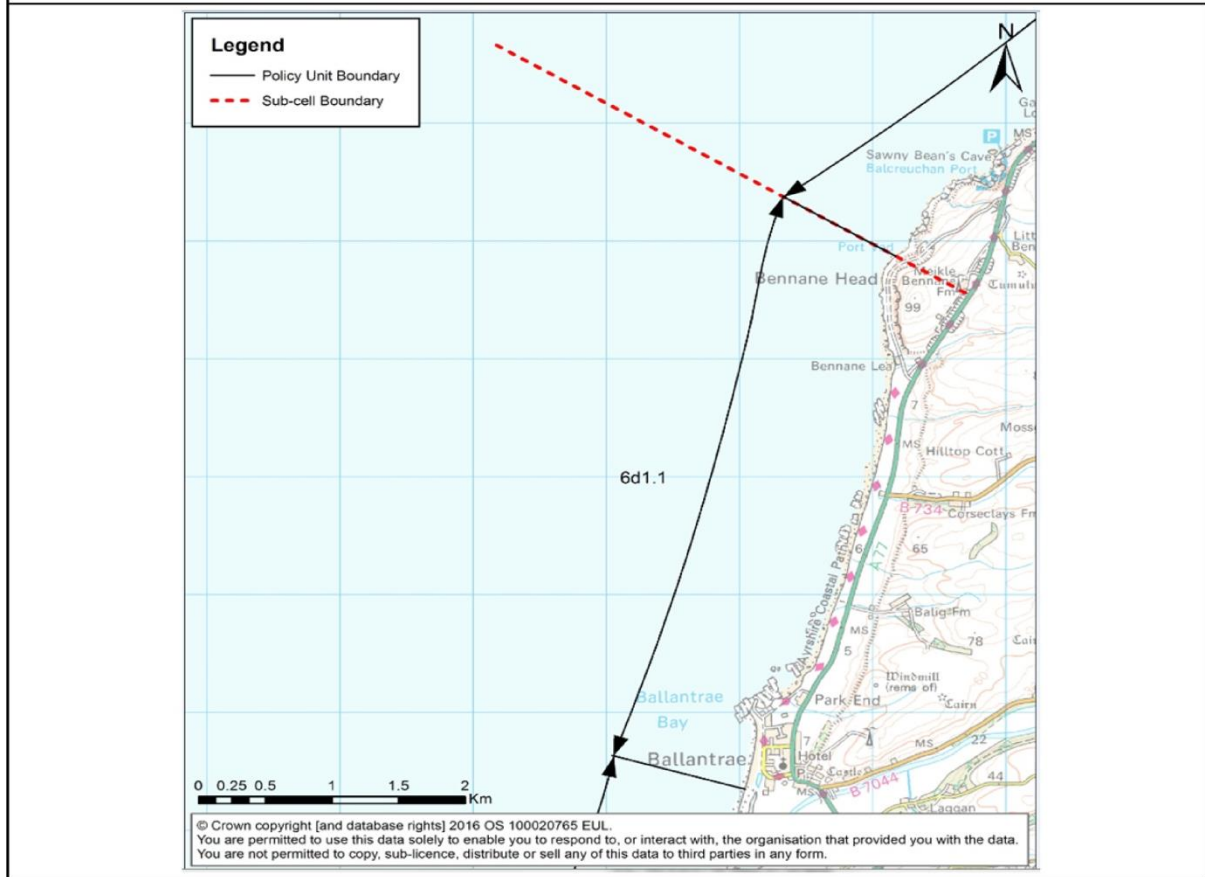
Policy Unit 6d1.2: South Ballantrae to Currarie Port**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	1.5-2.0m
RP _s AAD (£)	£0										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.026		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£0										
SSSIs (km ²)	0.164	0.173	0.002	0.000	0.000	0.000	0.002	0.000	0.000	0.000	

Subcell		Policy unit	
6d1		6d1.1	
Bennane Head - Currarie Port		Bennane Head to Ballantrae	
Policy			
Hold the line			
Issue			
Isolated area of coastal flood risk affecting one NRP and the A77 to the southern extent of Ballantrae. A significant section of the A77 was found to be at risk due to coastal erosion north of Ballantrae. The A77 is managed by Transport Scotland. The maximum wave height during a force 8 storm was found to be between 1.0-1.5m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Potentially feasible for the isolated area of flooding or to protect the A77 against erosion	Perched beaches	✓ Potentially feasible to protect the A77 against erosion
Revetments	✓ Potentially feasible to protect the A77 against erosion	Cove	✓ Potentially feasible to protect the A77 against erosion
Embankments	✓ Potentially feasible for the isolated area of flooding	Dune stabilisation	✓ Potentially feasible to protect the A77 against erosion
Maintenance	✓ There are existing defences including seawalls and rock armour	Managed realignment	▲ Potentially feasible if the road can be diverted
Groynes	✓ Potentially feasible to protect the A77 against erosion	Nourishment	✓ Potentially feasible to protect the A77 against erosion
Detached breakwaters	✓ Potentially feasible to protect the A77 against erosion	Beach drain	✓ Potentially feasible to protect the A77 against erosion
Headlands	✓ Potentially feasible to protect the A77 against erosion	Additional Actions	✗

Workshop Conclusions

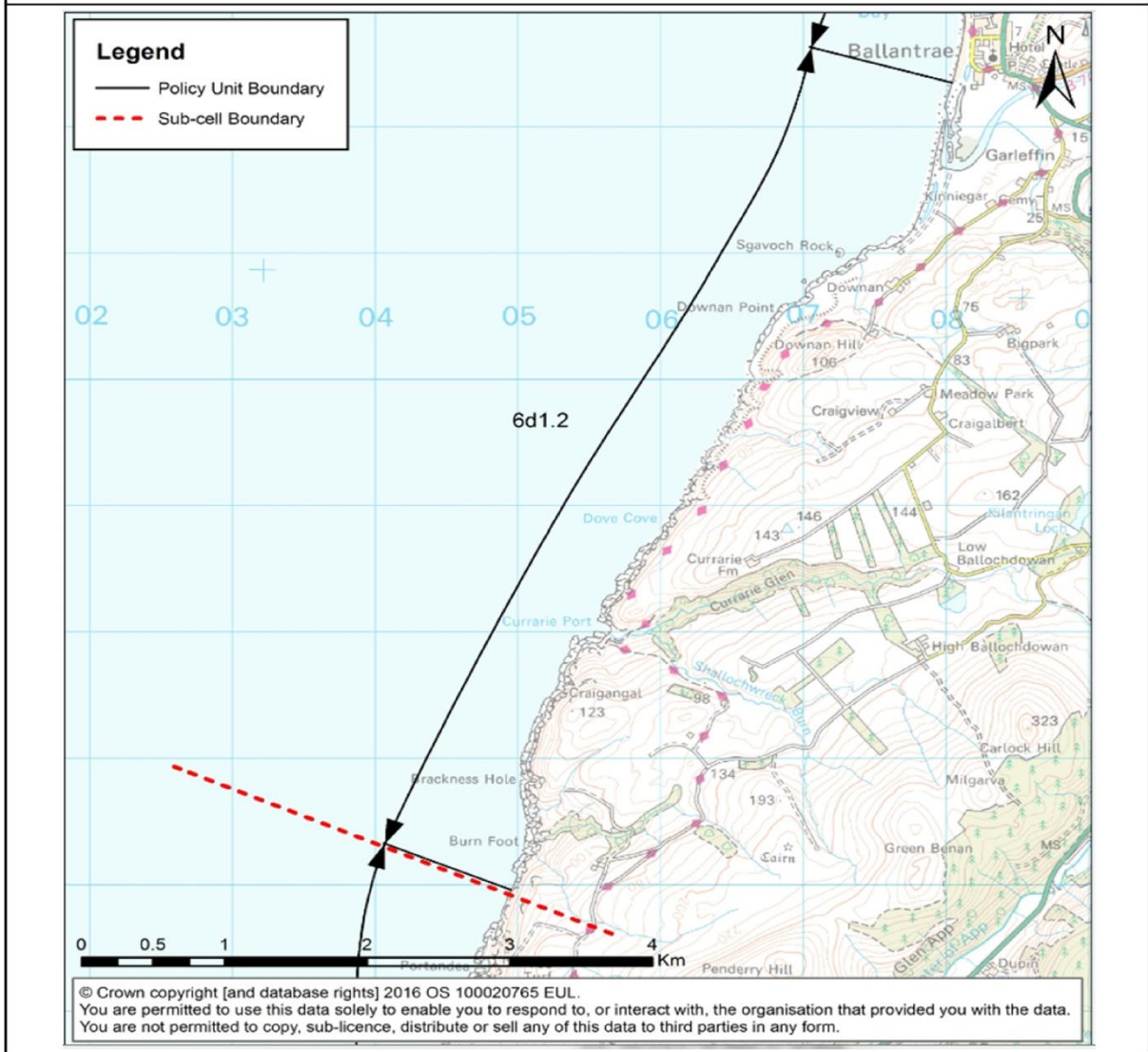
Significant defences are currently in place so maintenance is a potential action. Managed realignment is also a potential option if the road can be diverted. Transport Scotland to manage risk to their asset.



Subcell		Policy unit	
6d1		6d1.2	
Bennane Head - Currarie Port		South Ballantrae to Currarie Port	
Policy			
No active intervention			
Issue			
No assets have been identified to be at risk due to coastal flooding or erosion in this policy unit. The maximum wave height during a force 8 storm was found to be between 1.5-2.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✗ N/A	Perched beaches	✗ N/A
Revetments	✗ N/A	Cove	✗ N/A
Embankments	✗ N/A	Dune stabilisation	✗ N/A
Maintenance	✗ N/A	Managed realignment	✗ N/A
Groynes	✗ N/A	Nourishment	✗ N/A
Detached breakwaters	✗ N/A	Beach drain	✗ N/A
Headlands	✗ N/A	Additional Actions	✗

Workshop Conclusions

The policy was agreed with no amendments. No active intervention.



Sub-Cell 6d2: Currarie Port - Milleur Point**RISKS**

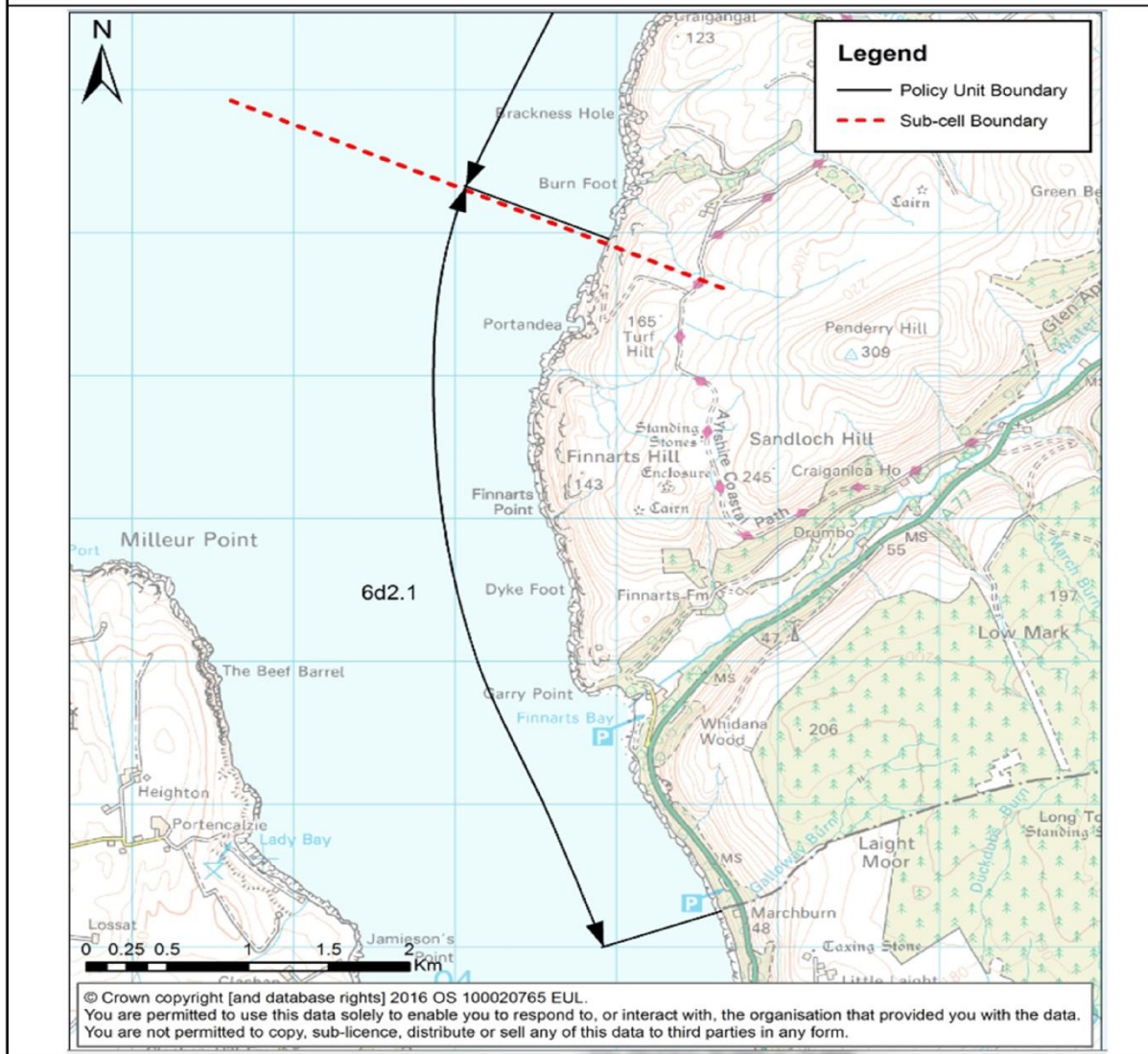
Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	137	257		0	0	0		0	0	0	1.5-2.0m
RP _s AAD (£)	£137,081										
NRPs (no.)	30	41		0	0	0		0	0	0	
NRPs AAD (£)	£39,911										
A Roads (km)	5.726	7.372		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.112	0.239		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£145,400										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

*Note this sub-cell contains assets located within Dumfries & Galloway Council, therefore the sum of the policy units may not total the sub-cell value.

Policy Unit 6d2.1: Currarie Port to Galloway Burn**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	1.5-2.0m
RP _s AAD (£)	£0										
NRPs (no.)	1	1		0	0	0		0	0	0	
NRPs AAD (£)	£1,045										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£5										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Subcell		Policy unit			
6d2		6d2.1			
Currarie Port - Milleur Point		Currarie Port to Galloway Burn			
Policy					
No active intervention					
Issue					
Isolated area of coastal flood risk at Finnarts Bay. No assets have been identified to be at risk due to erosion. The maximum wave height during a force 8 storm was found to be between 1.5-2.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	x	N/A	Perched beaches	x	N/A
Revetments	x	N/A	Cove	x	N/A
Embankments	x	N/A	Dune stabilisation	x	N/A
Maintenance	x	N/A	Managed realignment	x	N/A
Groynes	x	N/A	Nourishment	x	N/A
Detached breakwaters	x	N/A	Beach drain	x	N/A
Headlands	x	N/A	Additional Actions	x	
Workshop Conclusions					
The policy was agreed with no amendments. No active intervention. NRP at Finnarts Bay is abandoned.					



Sub-Cell A1: Lochranza - Clauchlands Point**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	17	48		0	0	0		0	0	1	<1.0m
RP _s AAD (£)	£16,628										
NRPs (no.)	22	30		0	1	2		0	1	4	
NRPs AAD (£)	£24,444										
A Roads (km)	1.918	4.011		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£39,471										
SSSIs (km ²)	0.096	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A1.1: Lochranza**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	6	8		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£1,569										
NRPs (no.)	3	4		0	0	0		0	0	0	
NRPs AAD (£)	£4,415										
A Roads (km)	0.404	0.952		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£7,924										
SSSIs (km ²)	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A1.2: Lochranza to Sannox**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£0										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£0										
SSSIs (km ²)	0.015	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A1.3: Sannox to Brodick**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	2	3		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£7,805										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.578	1.572		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£10,354										
SSSIs (km ²)	0.027	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

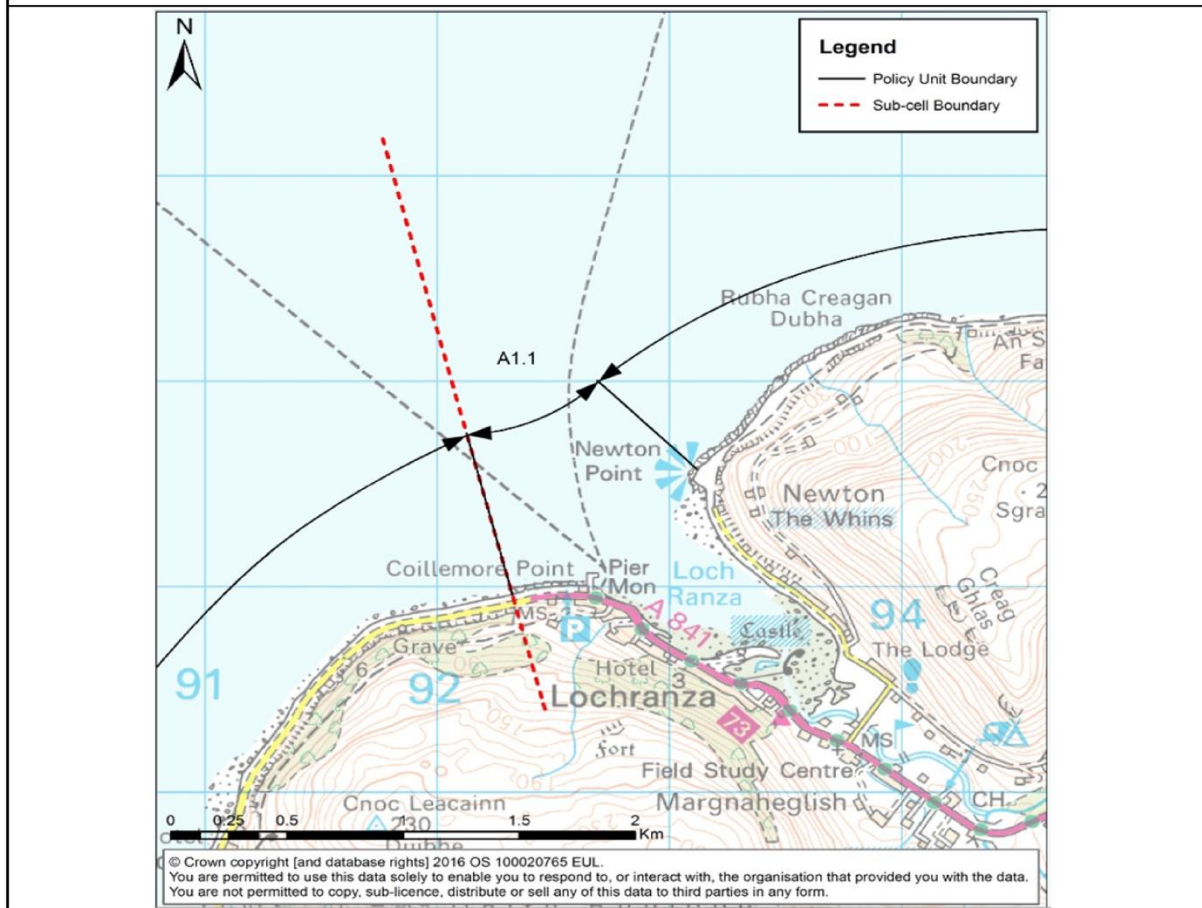
Policy Unit A1.4: Brodick**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	9	37		0	0	0		0	0	1	<1.0m
RP _s AAD (£)	£7,254										
NRPs (no.)	19	26		0	1	2		0	1	4	
NRPs AAD (£)	£20,029										
A Roads (km)	0.936	1.487		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£21,193										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A1.5: Brodick to Clauchlands Point**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£0										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£0										
SSSIs (km ²)	0.053	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

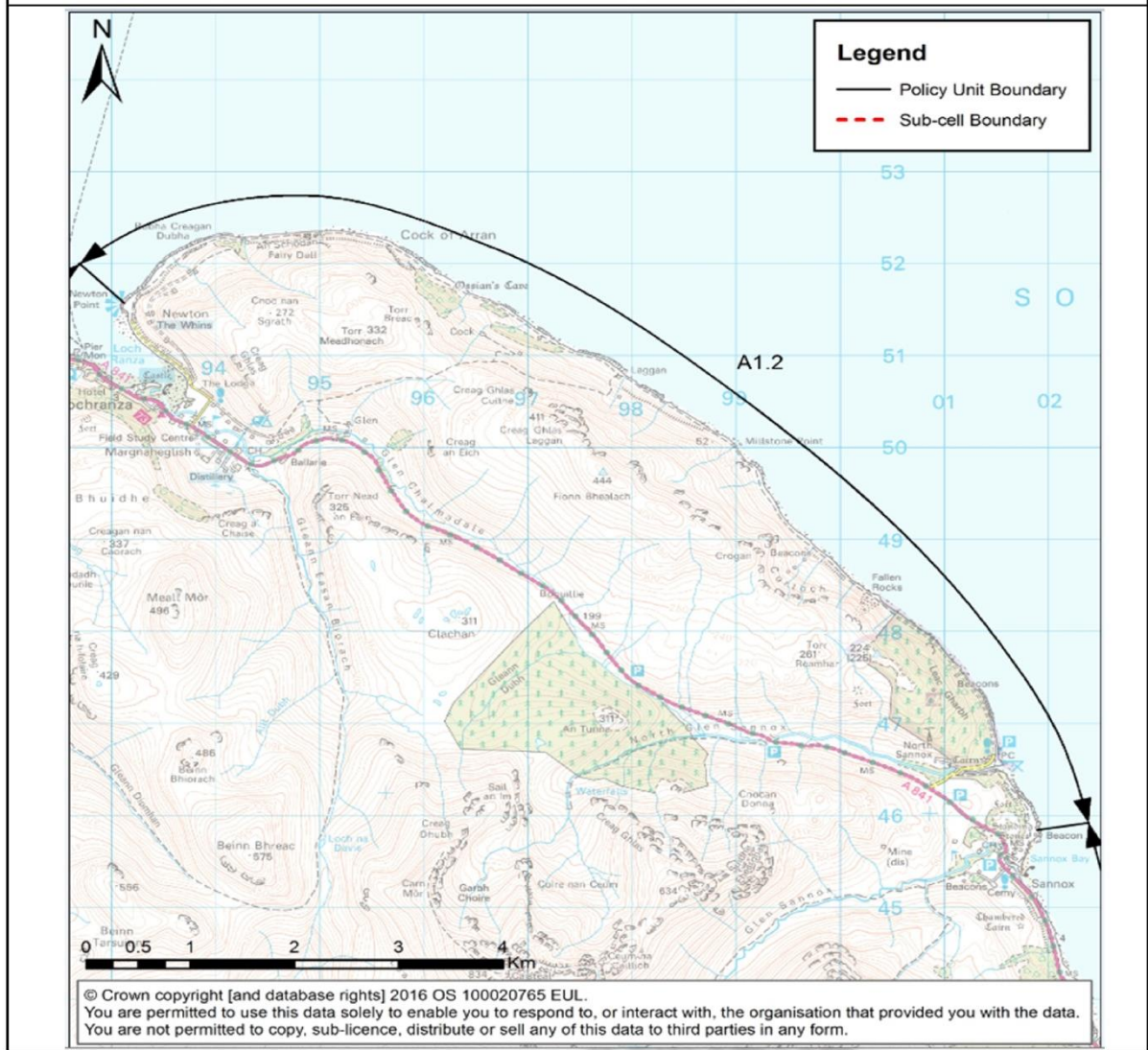
Subcell		Policy unit	
A1		A1.1	
Lochranza - Clauchlands Point		Lochranza	
Policy			
Hold the line			
Issue			
Significant area of flood risk around Newton Road affecting residential and non-residential properties. A significant section of the A841 is at risk of coastal flooding. Fluvial, pluvial and groundwater flooding risk present also. No assets were found to be at risk due to coastal erosion. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against flooding	Perched beaches	✗ Will not protect against flooding
Revetments	✗ Will not protect against flooding	Cove	✗ Will not protect against flooding
Embankments	✓ Will protect against flooding	Dune stabilisation	✗ No naturally occurring dunes
Maintenance	✓ There are existing defences including seawalls, revetments and rock armour	Managed realignment	✗ Will not hold the existing line
Groynes	✗ Will not protect against flooding	Nourishment	✓ Potentially feasible
Detached breakwaters	✗ Will not protect against flooding	Beach drain	✗ Will not protect against flooding
Headlands	✗ Will not protect against flooding	Additional Actions	✓ Integrated flood study recommended
Workshop Conclusions			
Significant flood risk from multiple sources. Recommended to carry out further local study considering all sources of flooding to establish suitable flood risk management actions.			



Subcell		Policy unit			
A1		A1.2			
Lochranza - Clauchlands Point		Lochranza to Sannox			
Policy					
No active intervention					
Issue					
No assets were found to be at risk due to coastal flooding or erosion. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	×	N/A	Perched beaches	×	N/A
Revetments	×	N/A	Cove	×	N/A
Embankments	×	N/A	Dune stabilisation	×	N/A
Maintenance	×	N/A	Managed realignment	×	N/A
Groynes	×	N/A	Nourishment	×	N/A
Detached breakwaters	×	N/A	Beach drain	×	N/A
Headlands	×	N/A	Additional Actions	×	

Workshop Conclusions

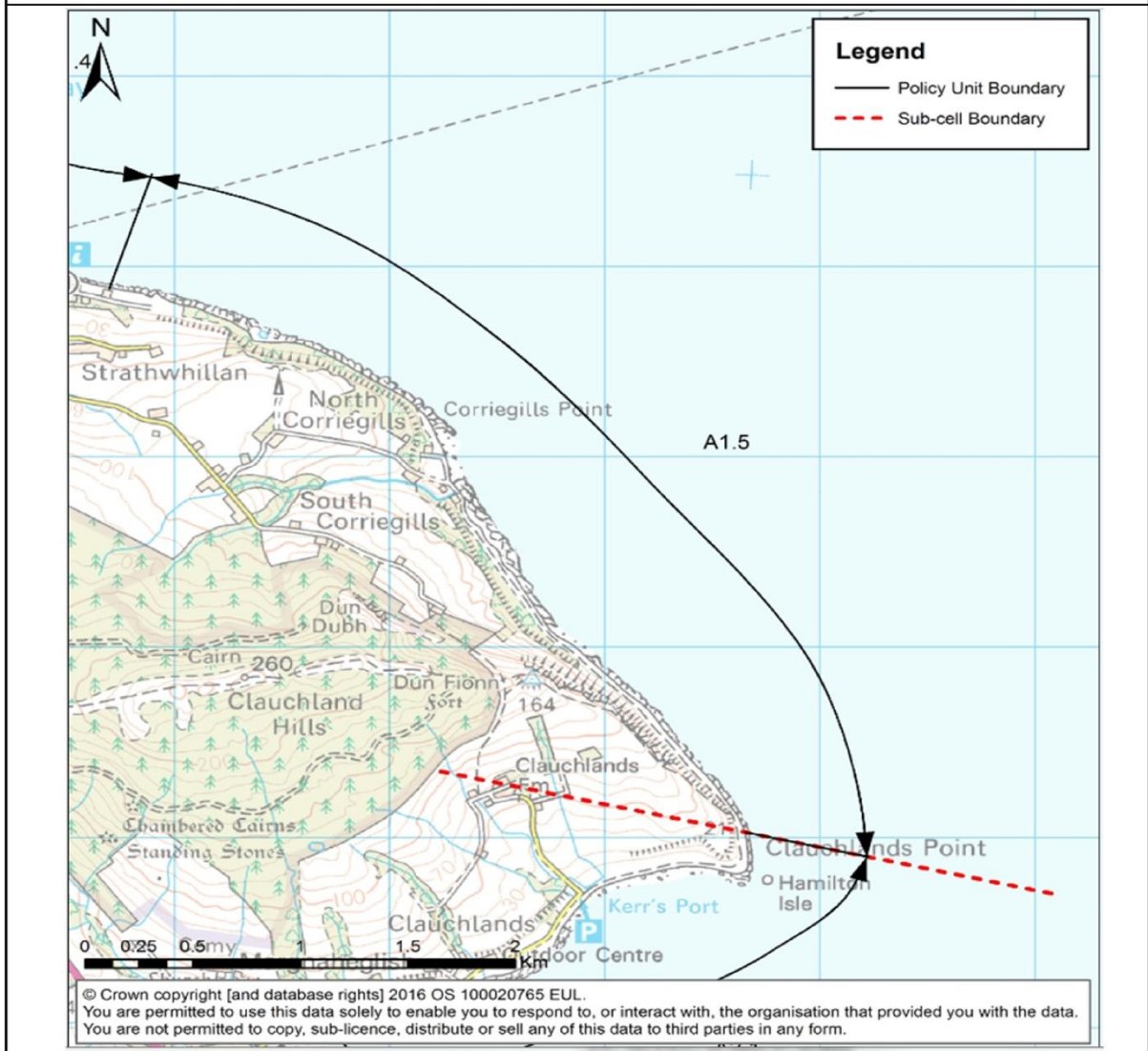
The policy was agreed with no amendments. No active intervention.



Subcell		Policy unit	
A1		A1.3	
Lochranza - Clauchlands Point		Sannox to Brodick	
Policy			
Hold the line			
Issue			
Isolated coastal flood risk affecting two residential properties at Sannox Bay. Isolated sections of the A841 were also found to be at risk of coastal flooding. The A841 is maintained by NAC. No assets were found to be at risk due to coastal erosion. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against flooding	Perched beaches	✗ Will not protect against flooding
Revetments	✗ Will not protect against flooding	Cove	✗ Will not protect against flooding
Embankments	✓ Will protect against flooding	Dune stabilisation	✓ Potentially feasible
Maintenance	✓ There are existing defences including seawalls, revetments and rock armour	Managed realignment	▲ May consider diverting road
Groynes	✗ Will not protect against flooding	Nourishment	✓ Potentially feasible
Detached breakwaters	✗ Will not protect against flooding	Beach drain	✗ Will not protect against flooding
Headlands	✗ Will not protect against flooding	Additional Actions	✗
Workshop Conclusions			
Flood and erosion risk to the road. Existing defences in place so maintenance is preferred. Actions will be the responsibility of NAC.			

Subcell		Policy unit			
A1		A1.4			
Lochranza - Clauchlands Point		Brodict			
Policy					
Hold the line					
Issue					
Significant coastal flood risk is the vicinity of the bowling green, with other isolated areas of flood risk along the A841. The A841 road is at significant coastal flood risk. The A841 is maintained by NAC. A significant number of properties are at risk due to coastal erosion also. A landfill site to the south of the policy unit is at risk of erosion and requires protection. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	✓	Will protect against both flooding and erosion	Perched beaches	▲	Will not advance the line but may be used in conjunction with other measures
Revetments	▲	Will not protect against flooding but may provide erosion protection	Cove	▲	Will not advance the line but may be used in conjunction with other measures
Embankments	▲	Will not protect against erosion but may provide flood protection	Dune stabilisation	▲	Potentially feasible
Maintenance	▲	There are existing defences including seawalls, rock armour revetments, a rock groyne and sand bags. Maintaining the existing defences will not advance the line	Managed realignment	✗	Will not advance the line
Groynes	▲	Will not advance the line but may be used in conjunction with other measures	Nourishment	▲	May be required in conjunction with hard shoreline reinforcement such as seawalls
Detached breakwaters	▲	Will not advance the line but may be used in conjunction with other measures	Beach drain	✗	Will not advance the line
Headlands	▲	Will not advance the line but may be used in conjunction with other measures	Additional Actions	▲	Remove landfill material. Wave overtopping study recommended.
Workshop Conclusions					
The policy agreed is hold the line. Recommended to protect landfill site at southern extent against erosion. Potential option to remove landfill was also suggested. Wave overtopping study recommended.					
<p>The map shows the coastline of Brodict Bay. A solid pink line represents the Policy Unit Boundary, and a dashed pink line represents the Sub-cell Boundary. Key locations marked include Brodict Castle and Country Park, Wine Port, Brewery, Old Quay, Cladach, Home Fm, Strabane, Mus, na Stone, CHP, MS, Pier, Hotel, Mayish, and Strathwhillan. The A1.4 road is also shown. A north arrow is in the top left corner. A scale bar at the bottom indicates 0, 25, 50, 75, 100 meters. Copyright information at the bottom reads: © Crown copyright [and database rights] 2016 OS 100020765 EML. You are permitted to use this data solely to enable you to respond to, or interact with, the organisation that provided you with the data. You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.</p>					

Subcell		Policy unit			
A1		A1.5			
Lochranza - Clauchlands Point		Brodict to Clauchlands Point			
Policy					
No active intervention					
Issue					
No assets have been identified to be at risk due to coastal flooding or erosion in this policy unit. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	x	N/A	Perched beaches	x	N/A
Revetments	x	N/A	Cove	x	N/A
Embankments	x	N/A	Dune stabilisation	x	N/A
Maintenance	x	N/A	Managed realignment	x	N/A
Groynes	x	N/A	Nourishment	x	N/A
Detached breakwaters	x	N/A	Beach drain	x	N/A
Headlands	x	N/A	Additional Actions	x	
Workshop Conclusions					
The policy was agreed with no amendments. No active intervention.					



Sub-Cell A2: Clauchlands Point - Kingscross Point**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	21	38		0	0	4		0	1	5	<1.0m
RP _s AAD (£)	£94,306										
NRPs (no.)	7	14		0	0	0		0	0	0	
NRPs AAD (£)	£8,501										
A Roads (km)	0.278	0.579		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.733	1.218		0.000	0.000	0.128		0.000	0.000	0.210	
Roads AAD (£)	£12,552										
SSSIs (km ²)	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A2.1: Clauchlands Point to Lamlash**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£0										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.121	0.406		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£919										
SSSIs (km ²)	0.012	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A2.2: Lamlash**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	21	38		0	0	4		0	1	5	<1.0m
RP _s AAD (£)	£94,306										
NRPs (no.)	7	14		0	0	0		0	0	0	
NRPs AAD (£)	£8,501										
A Roads (km)	0.278	0.579		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.612	0.812		0.000	0.000	0.128		0.000	0.000	0.210	
Roads AAD (£)	£11,633										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

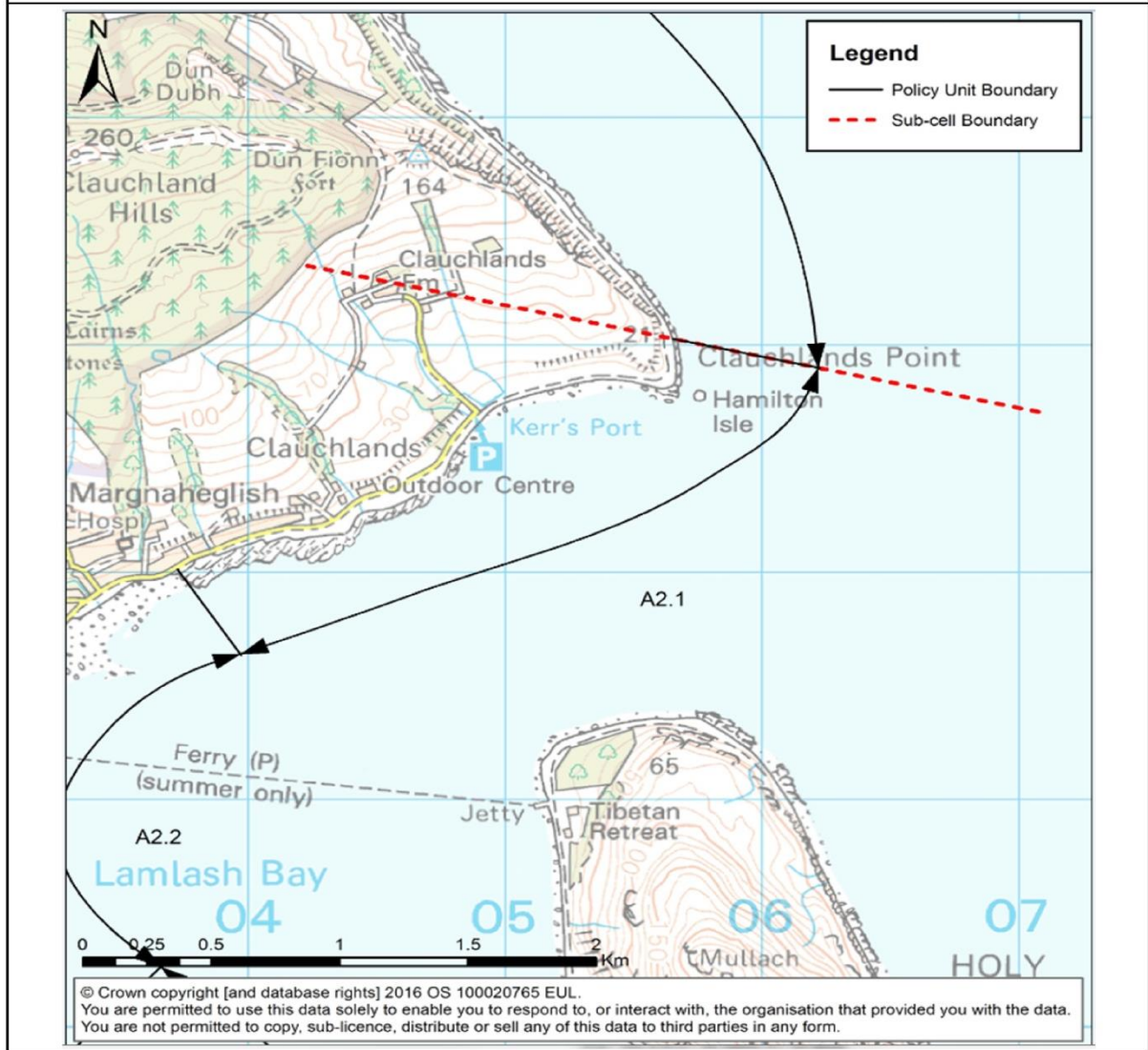
Policy Unit A2.3: Lamblash to Kingscross Point**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	0	0		0	0	0		0	0	0	<1.0m
RPs AAD (£)	£0										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£0										
SSSIs (km²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Subcell		Policy unit			
A2		A2.1			
Clauchlands Point - Kingscross Point		Clauchlands Point to Lamlash			
Policy					
No active intervention					
Issue					
A localised section of minor road was found to be at risk of coastal flooding close to the Outdoor Centre. No assets have been identified to be at risk due to coastal erosion in this policy unit. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	x	N/A	Perched beaches	x	N/A
Revetments	x	N/A	Cove	x	N/A
Embankments	x	N/A	Dune stabilisation	x	N/A
Maintenance	x	N/A	Managed realignment	x	N/A
Groynes	x	N/A	Nourishment	x	N/A
Detached breakwaters	x	N/A	Beach drain	x	N/A
Headlands	x	N/A	Additional Actions	x	

Workshop Conclusions

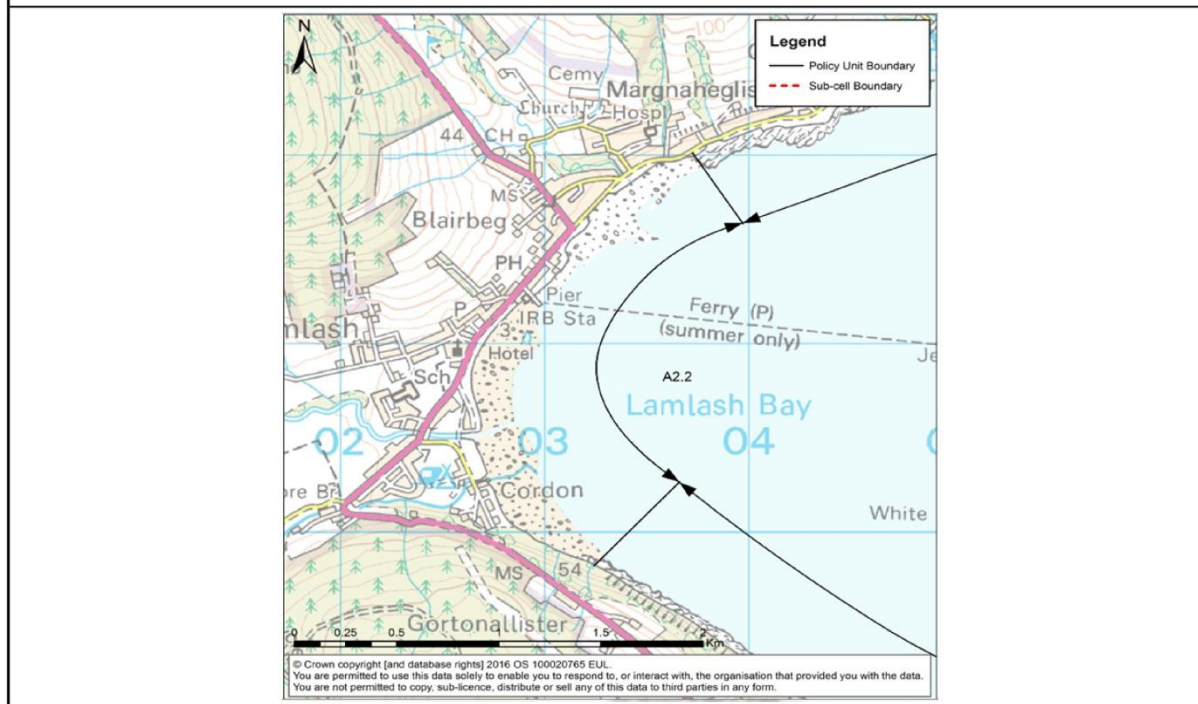
The policy was agreed with no amendments.



Subcell		Policy unit	
A2		A2.2	
Clauchlands Point - Kingscross Point		Lamlash	
Policy			
Hold the line			
Issue			
Significant coastal flood risk to properties at Cuddy Dook and adjacent to the tennis courts. A significant section of minor road at Cuddy Dook is at risk of coastal flooding, as well as isolated sections of the A841. The A841 is maintained by NAC. Properties and the minor road at Cuddy Dook were also found to be at risk due to coastal erosion. SW assets run along the beach and are at risk of erosion. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against both flooding and erosion	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	▲ Will not protect against flooding but may provide erosion protection	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	▲ Will not protect against erosion but may provide flooding protection	Dune stabilisation	✗ No naturally occurring dunes
Maintenance	✓ There are existing defences including seawalls, revetments and rock armour	Managed realignment	✗ Will not hold the existing line
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	✓ Potentially feasible in isolated areas
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✓ FRA commissioned by NAC. Wave overtopping study recommended.

Workshop Conclusions

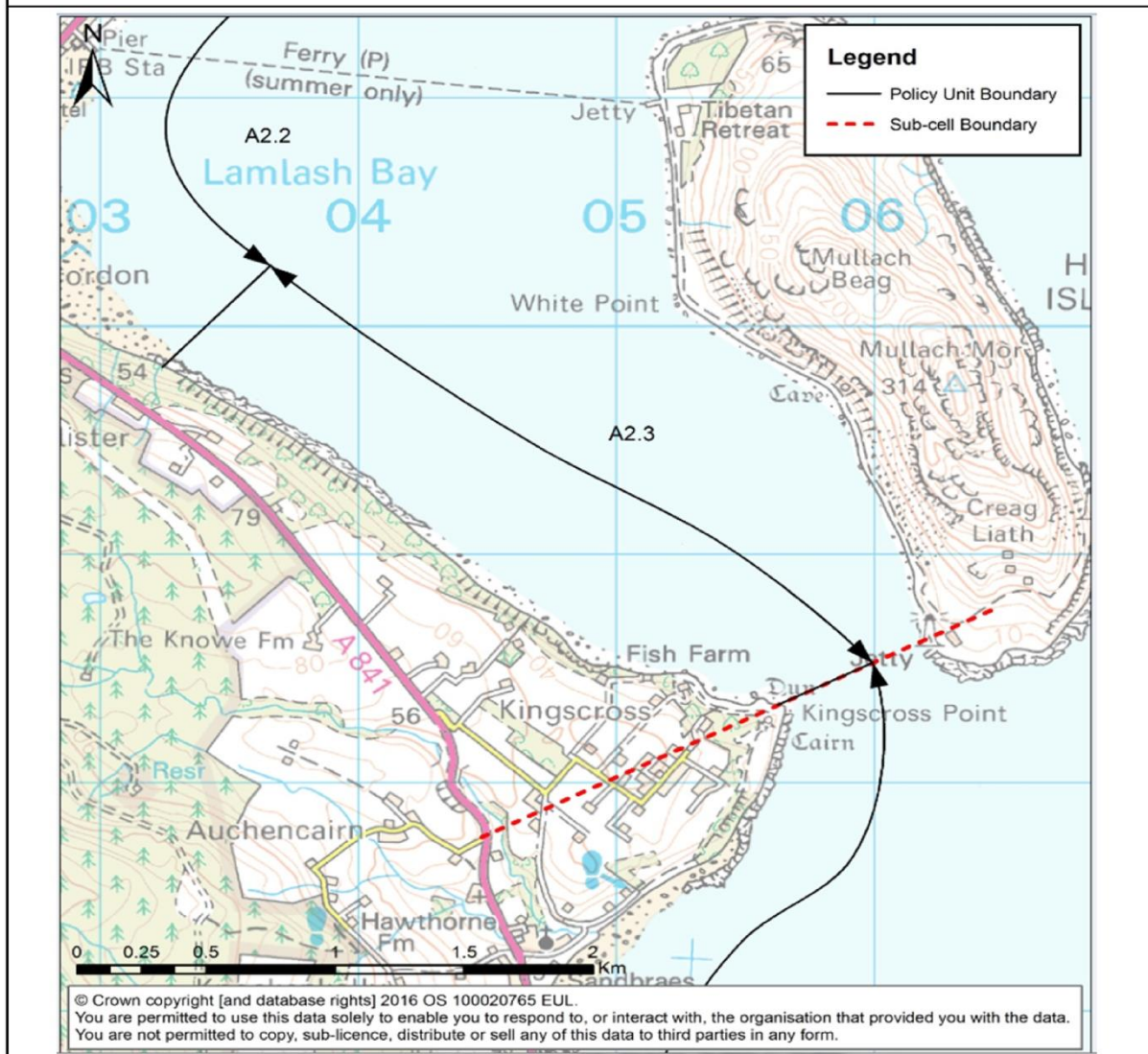
The policy was agreed with no amendments. SW to manage risk to their assets. NAC has implemented revetment works at Lamlash Green. FRA commissioned by NAC. Wave overtopping study recommended.



Subcell		Policy unit			
A2		A2.3			
Clauchlands Point - Kingscross Point		Lamlash to Kingscross Point			
Policy					
No active intervention					
Issue					
No assets have been identified to be at risk due to coastal flooding or erosion in this policy unit. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	x	N/A	Perched beaches	x	N/A
Revetments	x	N/A	Cove	x	N/A
Embankments	x	N/A	Dune stabilisation	x	N/A
Maintenance	x	N/A	Managed realignment	x	N/A
Groynes	x	N/A	Nourishment	x	N/A
Detached breakwaters	x	N/A	Beach drain	x	N/A
Headlands	x	N/A	Additional Actions	x	

Workshop Conclusions

The policy was agreed with no amendments. No active intervention.



Sub-Cell A3: Kingscross Point - Drumadoon Point**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	19	34		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£60,206										
NRPs (no.)	4	7		0	0	0		0	0	0	
NRPs AAD (£)	£2,994										
A Roads (km)	0.960	1.269		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.311	0.470		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£32,014										
SSSIs (km ²)	0.221	0.254	0.002	0.000	0.000	0.000	0.002	0.000	0.000	0.000	

Policy Unit A3.1: Whiting Bay**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	18	23		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£59,420										
NRPs (no.)	4	6		0	0	0		0	0	0	
NRPs AAD (£)	£2,994										
A Roads (km)	0.929	1.184		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.021	0.023		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£28,416										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A3.2: Largymore to Drumadoon Point**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	1	11		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£786										
NRPs (no.)	0	1		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.031	0.086		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.290	0.447		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£3,598										
SSSIs (km ²)	0.221	0.254	0.002	0.000	0.000	0.000	0.002	0.000	0.000	0.000	

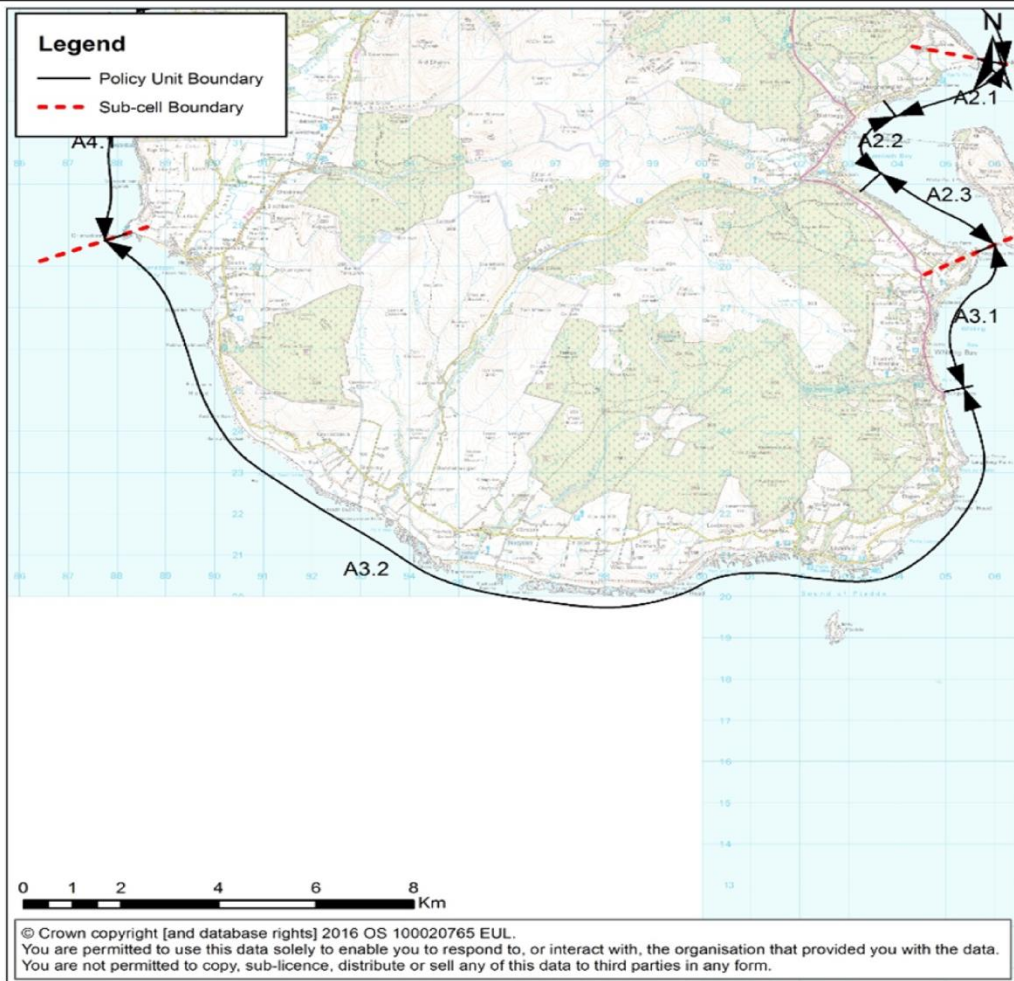
Subcell		Policy unit	
A3		A3.1	
Kingscross Point - Drumadoon Point		Whiting Bay	
Policy			
Hold the line			
Issue			
Significant coastal flood risk to properties at Montrose Terrace. The A841 road is also at significant risk of coastal flooding. The A841 is maintained by NAC. No assets have been identified to be at risk due to coastal erosion in this policy unit. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against flooding	Perched beaches	✗ Will not protect against flooding
Revetments	✗ Will not protect against flooding	Cove	✗ Will not protect against flooding
Embankments	✓ Will protect against flooding	Dune stabilisation	✗ No naturally occurring dunes
Maintenance	✓ There are existing defences including seawalls, revetments and rock armour	Managed realignment	✗ Will not hold the existing line
Groynes	✗ Will not protect against flooding	Nourishment	✓ Potentially feasible
Detached breakwaters	✗ Will not protect against flooding	Beach drain	✗ Will not protect against flooding
Headlands	✗ Will not protect against flooding	Additional Actions	✓ Wave overtopping study recommended
Workshop Conclusions			
It was noted that Whiting Bay and Districts Improvements Association have reported breaches in the existing sea wall. There may be drainage issues from fluvial and pluvial flooding which need to be considered when implementing SMP actions. Wave overtopping study recommended.			



Subcell		Policy unit	
A3		A3.2	
Kingscross Point - Drumadoon Point		Largymore to Drumadoon Point	
Policy			
No active intervention			
Issue			
<p>One RP was found to be at risk of coastal flooding at Kildonan. Localised sections of the A841 at Largymore and minor roads at Kildonan and Blackwaterfoot were also found to be at risk due to coastal flooding. No assets have been identified to be at risk due to coastal erosion in this policy unit. The maximum wave height during a force 8 storm was found to be less than 1.0m.</p>			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✗ N/A	Perched beaches	✗ N/A
Revetments	✗ N/A	Cove	✗ N/A
Embankments	✗ N/A	Dune stabilisation	✗ N/A
Maintenance	✗ N/A	Managed realignment	✗ N/A
Groynes	✗ N/A	Nourishment	✗ N/A
Detached breakwaters	✗ N/A	Beach drain	✗ N/A
Headlands	✗ N/A	Additional Actions	✗

Workshop Conclusions

The policy was agreed with no amendments. No active intervention. Road is elevated so should not be at risk.



Sub-Cell A4: Drumadoon Point - Lochranza**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	1	1		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£3,428										
NRPs (no.)	0	0		0	0	1		0	0	1	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	2.329	5.300		0.000	0.000	0.219		0.000	0.000	0.235	
Roads AAD (£)	£20,227										
SSSIs (km ²)	0.055	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit A4.1: Drumadoon Point to Tormore**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	0	0		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£0										
NRPs (no.)	0	0		0	0	0		0	0	0	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£0										
SSSIs (km ²)	0.055	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

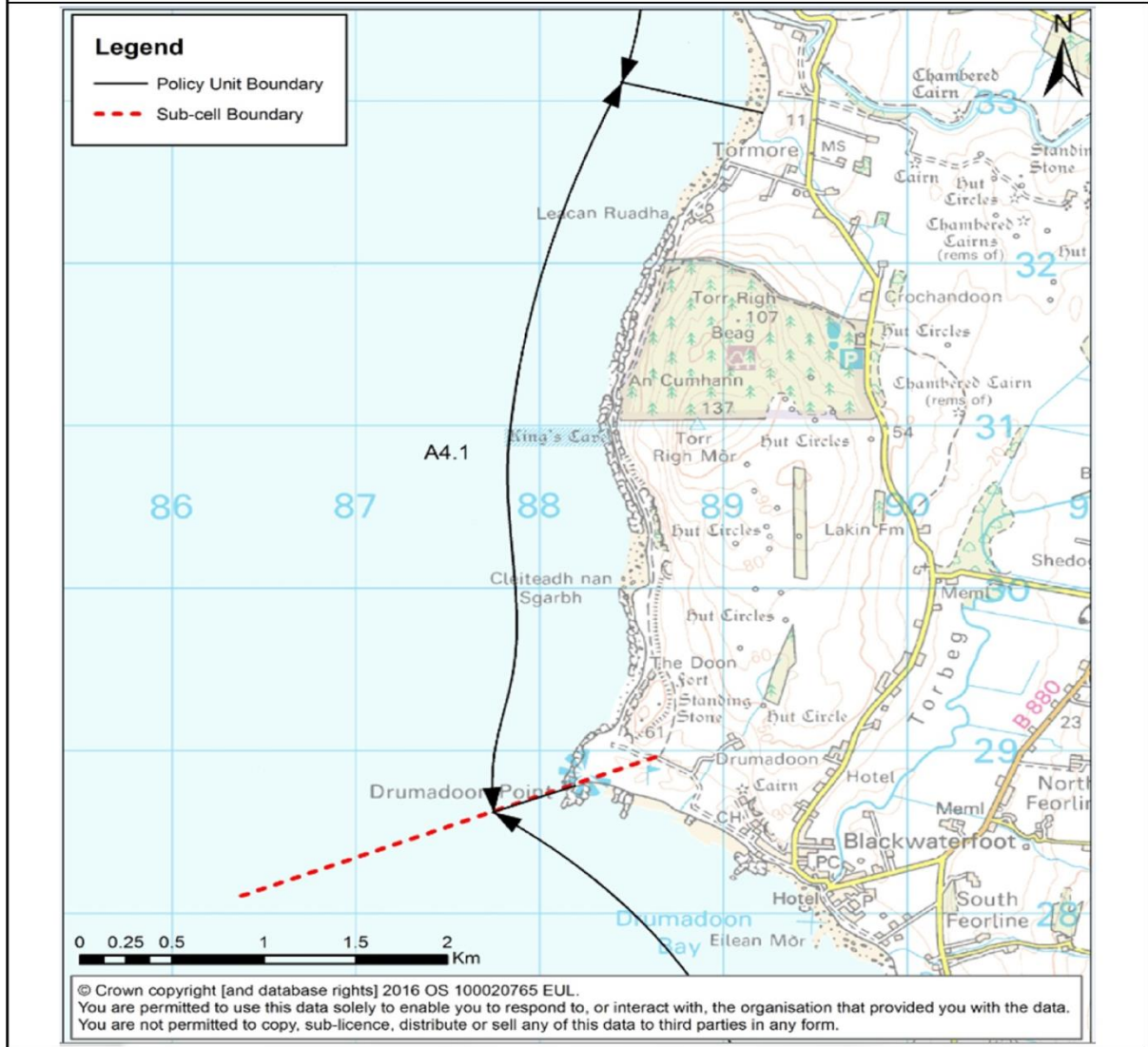
Policy Unit A4.2: Machrie Bay to Lochranza**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave Max. Significant Wave Height (Hm0)
	200yr	200yr CC	2050				2100				
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RP _s (no.)	1	1		0	0	0		0	0	0	<1.0m
RP _s AAD (£)	£3,428										
NRPs (no.)	0	0		0	0	1		0	0	1	
NRPs AAD (£)	£0										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	2.329	5.300		0.000	0.000	0.219		0.000	0.000	0.235	
Roads AAD (£)	£20,227										
SSSIs (km ²)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

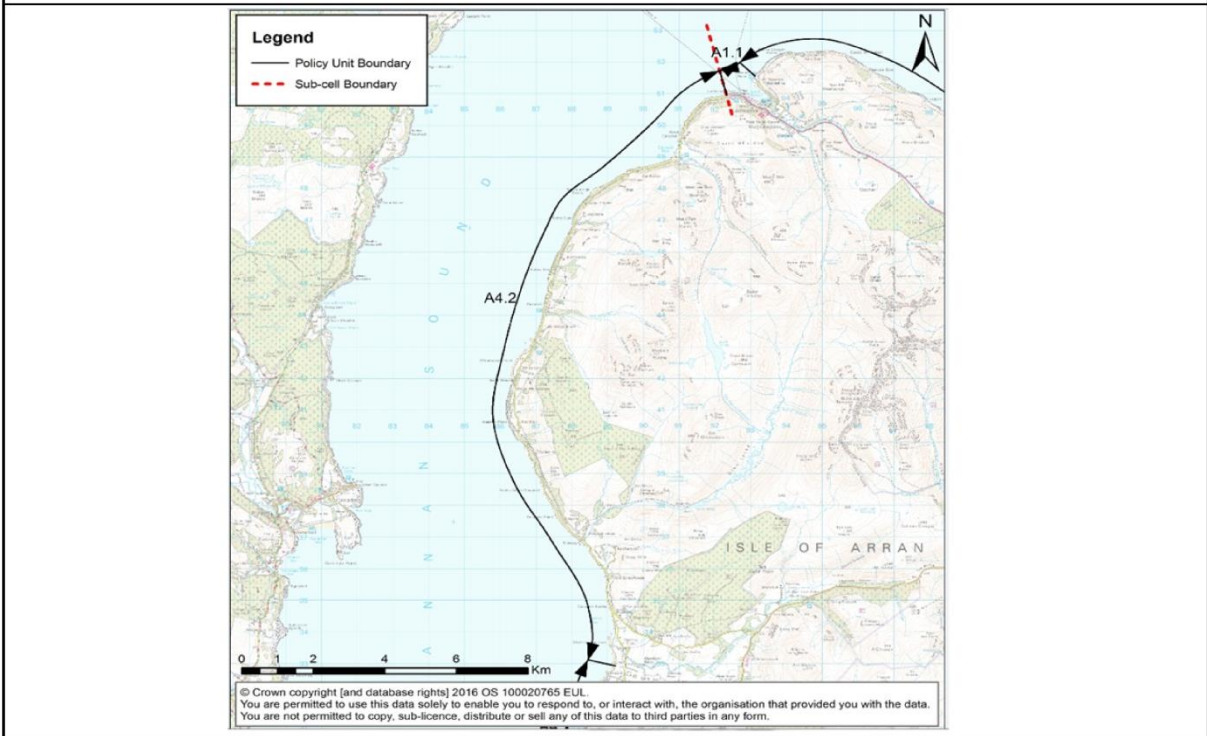
Subcell		Policy unit			
A4		A4.1			
Drumadoon Point - Lochranza		Drumadoon Point to Tormore			
Policy					
No active intervention					
Issue					
No assets have been identified to be at risk due to coastal flooding or erosion in this policy unit. The maximum wave height during a force 8 storm was found to be less than 1.0m.					
Potential Actions	Technically feasible?		Potential Actions	Technically feasible?	
Seawalls	×	N/A	Perched beaches	×	N/A
Revetments	×	N/A	Cove	×	N/A
Embankments	×	N/A	Dune stabilisation	×	N/A
Maintenance	×	N/A	Managed realignment	×	N/A
Groynes	×	N/A	Nourishment	×	N/A
Detached breakwaters	×	N/A	Beach drain	×	N/A
Headlands	×	N/A	Additional Actions	×	

Workshop Conclusions

The policy was agreed with no amendments. No active intervention.



Subcell		Policy unit	
A4		A4.2	
Drumadoon Point - Lochranza		Machrie Bay to Lochranza	
Policy			
Hold the line			
Issue			
One RP at Dougarie was found to be at risk of coastal flooding. Significant sections of the A841 were also found to be at risk of coastal flooding at Machrie Bay, Dougarie, Pirnmill, Thundergay and Catacol Bay. One NRP and a section of the A841 were also found to be at risk due to coastal erosion. The A841 is maintained by NAC. The maximum wave height during a force 8 storm was found to be less than 1.0m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against both flooding and erosion	Perched beaches	▲ Will not protect against flooding but may provide erosion protection
Revetments	▲ Will not protect against flooding but may provide erosion protection	Cove	▲ Will not protect against flooding but may provide erosion protection
Embankments	▲ Will not protect against erosion but may provide flooding protection	Dune stabilisation	✓ Potentially feasible in isolated areas
Maintenance	✓ There are existing defences including seawalls and rock armour revetments	Managed realignment	▲ May consider diverting road
Groynes	▲ Will not protect against flooding but may provide erosion protection	Nourishment	✓ Potentially feasible in isolated areas
Detached breakwaters	▲ Will not protect against flooding but may provide erosion protection	Beach drain	▲ Will not protect against flooding but may provide erosion protection
Headlands	▲ Will not protect against flooding but may provide erosion protection	Additional Actions	✗
Workshop Conclusions			
Policy unit boundary changed to include northern section of road in hold the line policy. Preferred action would be maintenance of existing defences. Actions will be the responsibility of NAC.			



Sub-Cell Great Cumbrae**RISKS**

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
	200yr	200yr CC	2050				2100				Max. Significant Wave Height (Hm0)
			Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	4	75		0	0	0		0	0	0	1.0-1.5m
RPs AAD (£)	£4,121										
NRPs (no.)	5	10		0	0	0		0	0	0	
NRPs AAD (£)	£3,412										
A Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
B Roads (km)	4.560	6.044		0.000	0.000	0.000		0.000	0.000	0.000	
Minor Roads (km)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	
Roads AAD (£)	£73,143										
SSSIs (km²)	0.048	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Policy Unit Great Cumbrae is the only policy unit within this sub-cell, therefore the policy unit risk values are equal to the sub-cell risk values.

Subcell		Policy unit	
Great Cumbrae		Great Cumbrae	
Policy			
Hold the line			
Issue			
Localised coastal flood risk to properties at Quayhead, Millport and at the Water Sports Centre Jetty. Roads to the North of the Island are also at risk due to coastal flooding. No assets have been identified to be at risk due to coastal erosion in this policy unit. The maximum wave height during a force 8 storm was found to be between 1.0-1.5m.			
Potential Actions	Technically feasible?	Potential Actions	Technically feasible?
Seawalls	✓ Will protect against flooding	Perched beaches	✗ Will not protect against flooding
Revetments	✗ Will not protect against flooding	Cove	✗ Will not protect against flooding
Embankments	✓ Will protect against flooding	Dune stabilisation	✗ No naturally occurring dunes
Maintenance	✓ There are existing defences including seawalls, revetments and rock armour	Managed realignment	▲ May consider diverting road
Groynes	✗ Will not protect against flooding	Nourishment	✓ Potentially feasible
Detached breakwaters	✗ Will not protect against flooding	Beach drain	✗ Will not protect against flooding
Headlands	✗ Will not protect against flooding	Additional Actions	✗
Workshop Conclusions			
NAC scheme proposed for Millport. Policy changed to hold the line for the road. Preferred action would be maintenance of existing defences. Actions will be the responsibility of the asset owner.			

