Ayrshire Shoreline Management Plan

Appendix D: Policy & Actions Assessment

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Ayrshire Shoreline Management Plan

Appendix D: Policy & Actions Assessment

DOCUMENT CONTROL SHEET

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Project Title	Ayrshire Shoreline Management Plan					
Document Title	Appendix D – Policy & Actions Assessment					
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This Document Comprises	DCS	TOC	Text	List of Tables	List of Figures	No. of Appendices
	1	0	54	0	0	0

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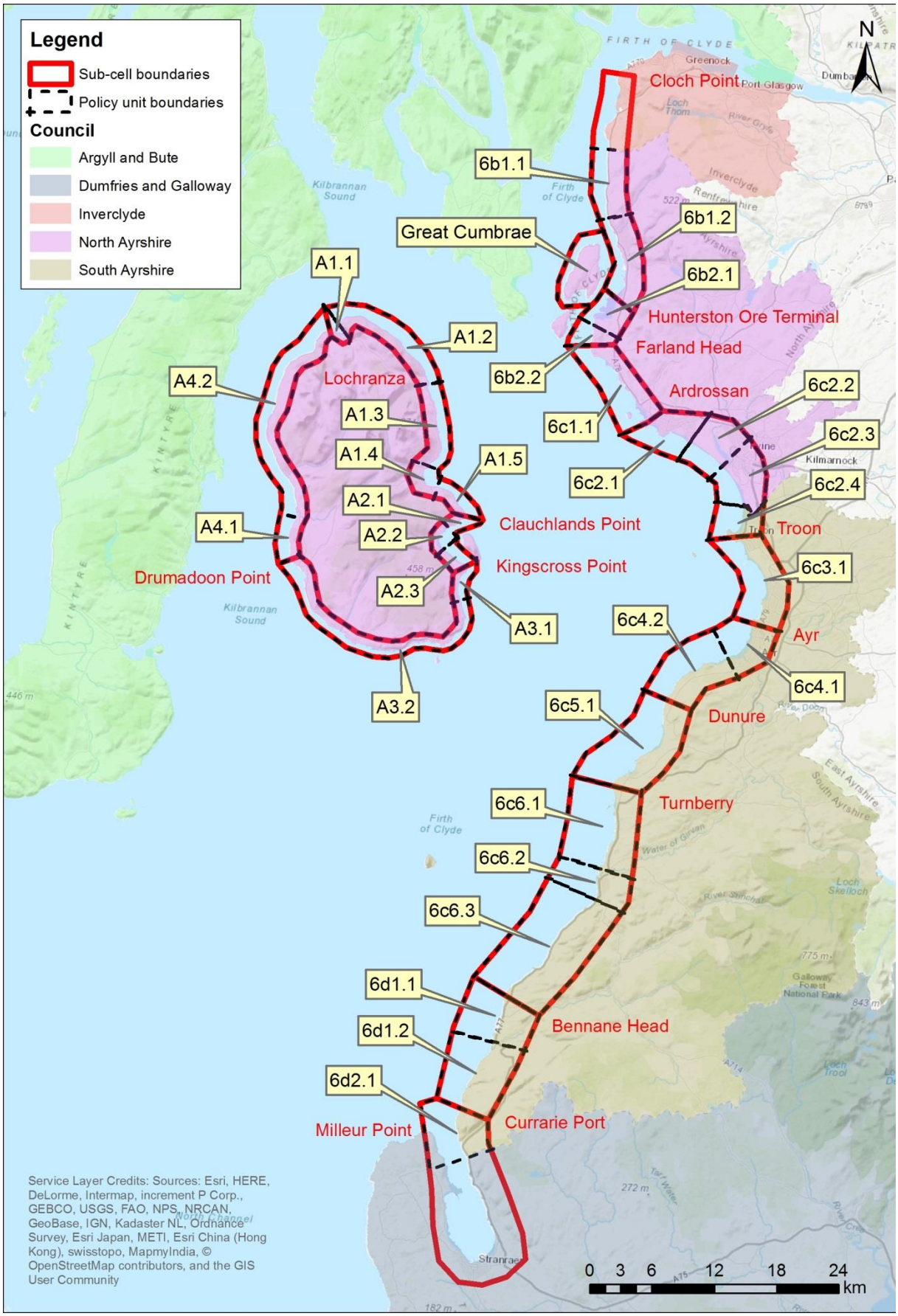
D01	Draft	DI	MB	MB	Belfast	23/01/2018

AYRSHIRE SMP STUDY AREA EXTENTS



Long List of Potential Actions to achieve Shoreline Management Policies

	Policies action is applicable for				Risks action is applicable for			Construction Type
Potential Actions	**Hold the line**	**Advance the line**	**Managed realignment**	**No active intervention**	**Tidal Flooding**	**Wave Overtopping**	**Erosion**	**Hard / Soft / Mixed**
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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	249	402		0	0	0		0	0	1	<1.0m
RPs AAD (£)	£98,724										
NRPs (no.)	78	138		0	0	2		0	0	2	
NRPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
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)	0.298	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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	249	402		0	0	0		0	0	1	<1.0m
RPs AAD (£)	£98,724										
NRPs (no.)	75	132		0	0	2		0	0	2	
NRPs 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

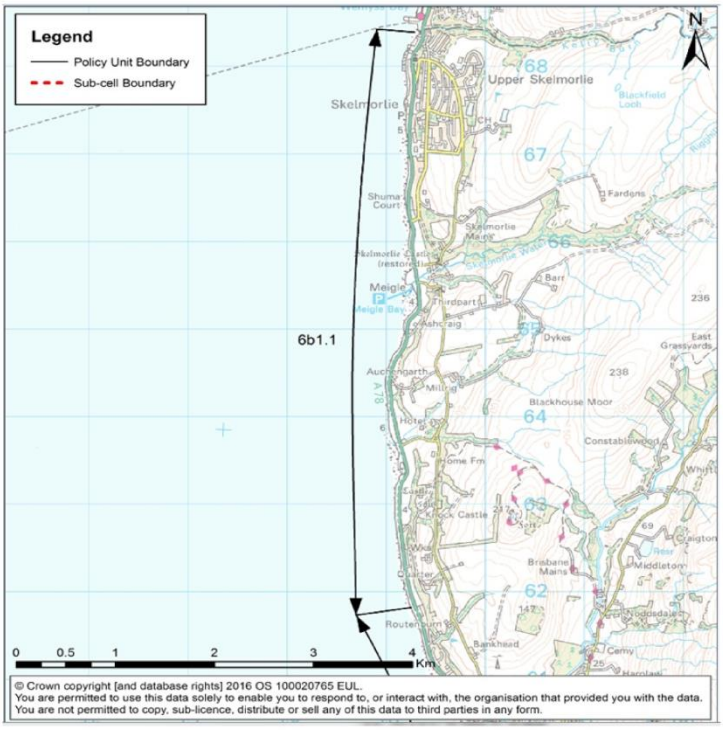
Issue

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.

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

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.



Subcell	Policy unit
6b1	**6b1.2**
Cloch Point - Hunterston Ore Terminal	**Largs to Hunterston Ore Terminal**

Policy

Hold the line

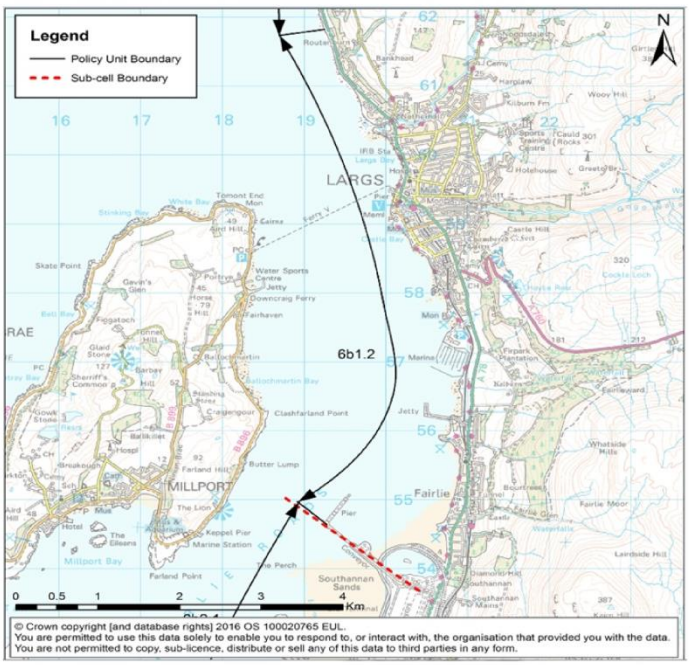
Issue

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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	0	0		0	0	0		0	0	0	1.0-1.5m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	0	0		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	0	0		0	0	0		0	0	0	1.0-1.5m
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 (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

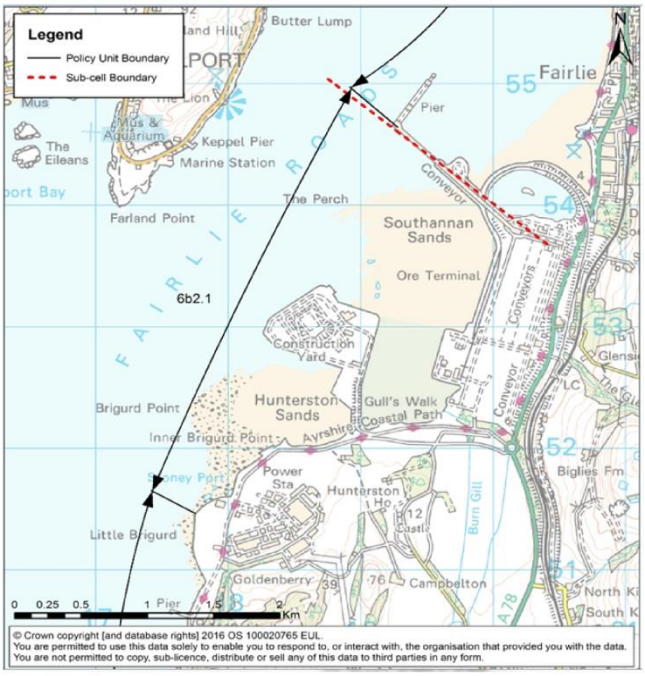
Issue

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

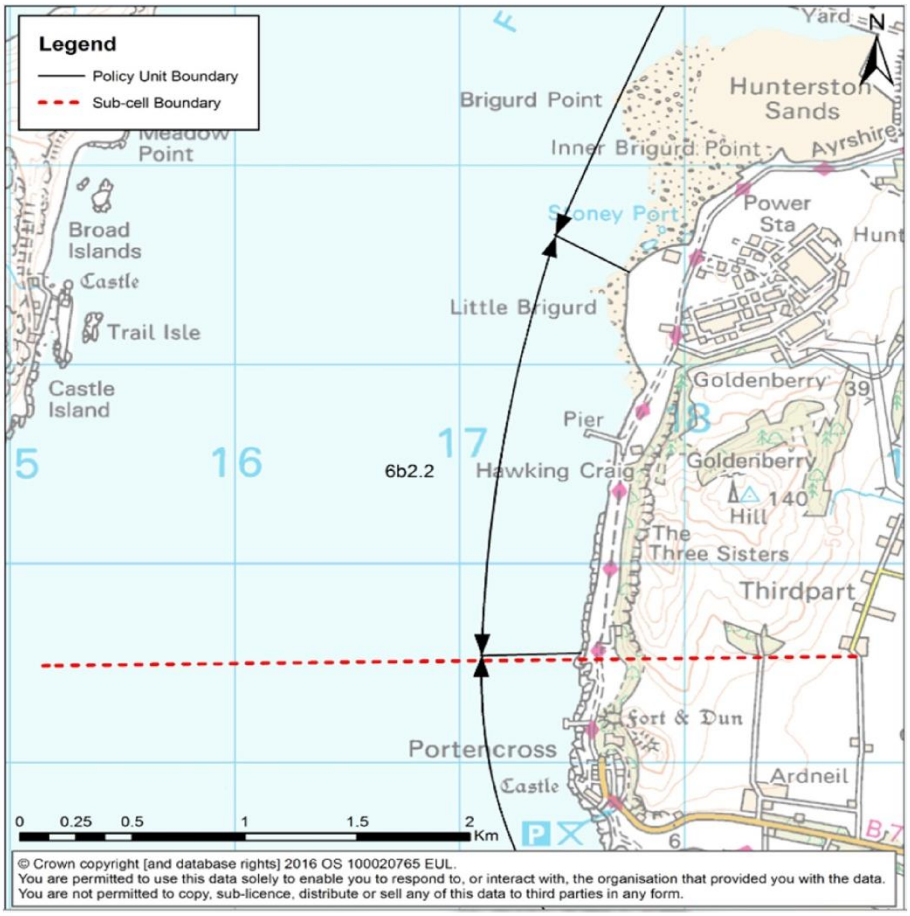
Issue

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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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 (km^2)	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 Ardossan) 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

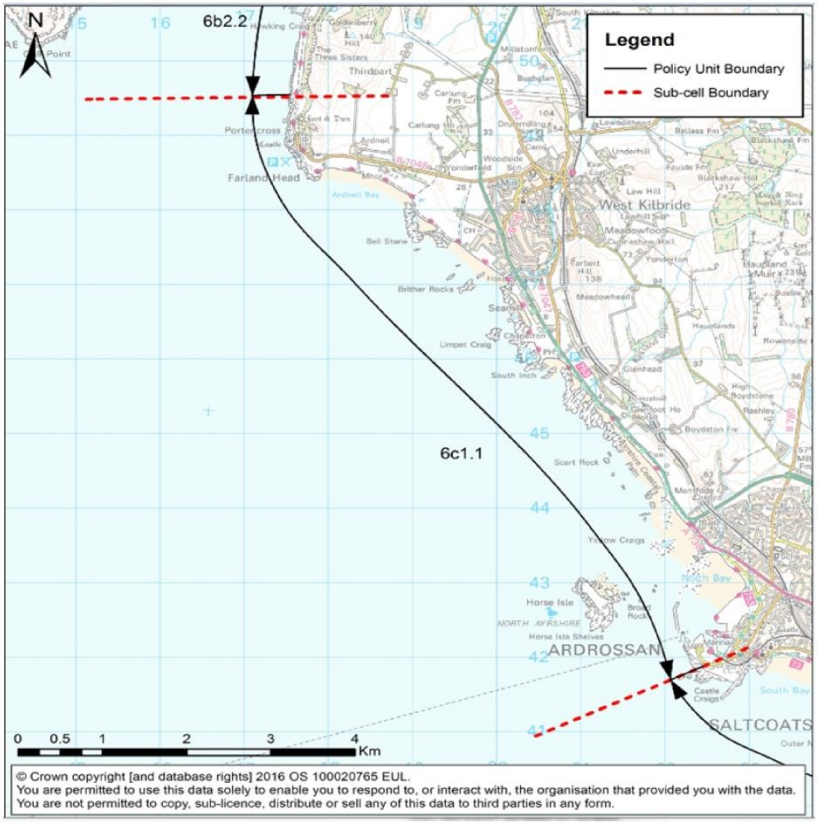
Issue

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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	134	707		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	13	382		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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.)	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 Gailes Burn

RISKS

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	10	84		0	0	0		0	0	0	<1.0m
RPs 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: Gailes Burn to Troon

RISKS

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	111	241		0	0	0		0	0	0	<1.0m
RPs 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.

Subcell	Policy unit
6c2	**6c2.2**
Ardrossan - Troon	**Stevenston to Irvine Bay**

Policy

Hold the line

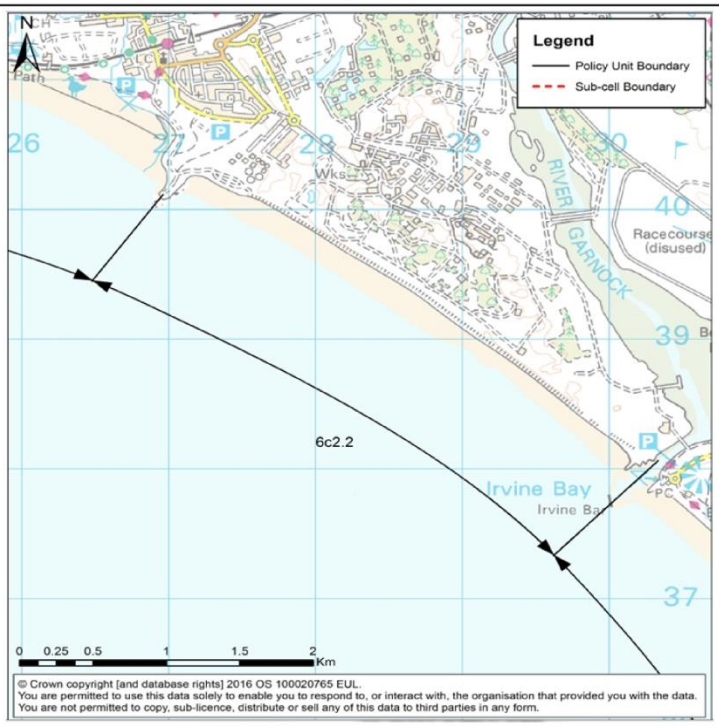
Issue

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 Gailes Burn**

Policy

Hold the line

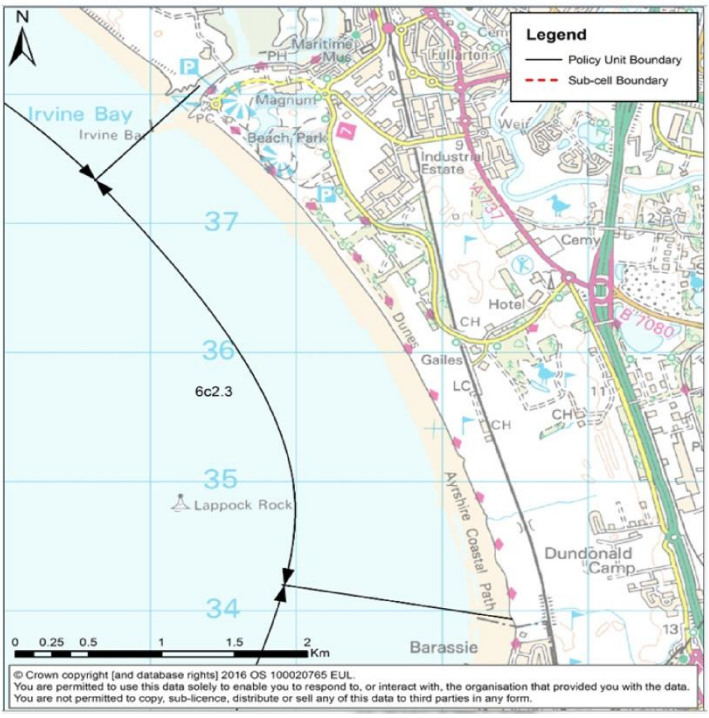
Issue

Significant coastal flood risk adjacent to the River Irvine. No assets were identified as being at risk due to coastal erosion, however Local Auhorities 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

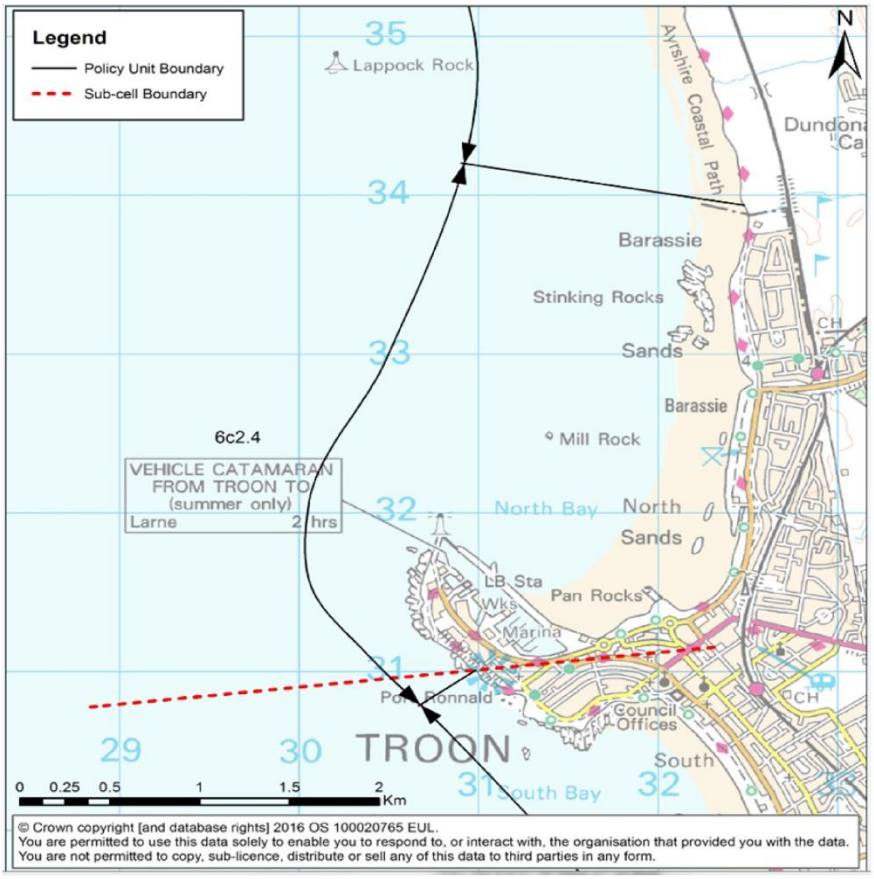
Issue

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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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 (km^2)	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

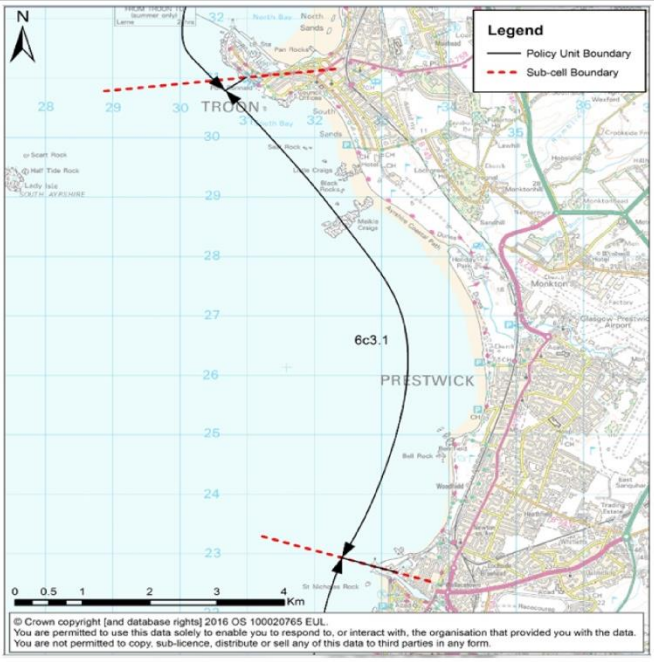
Issue

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 ad 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 of 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	173	575		0	0	0		0	0	0	1.5-2.0m
RPs AAD (£)	£143,844										
NRPs (no.)	26	59		0	0	0		0	0	0	
NRPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	173	575		0	0	0		0	0	0	<1.0m
RPs AAD (£)	£143,844										
NRPs (no.)	24	57		0	0	0		0	0	0	
NRPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	0	0		0	0	0		0	0	0	1.5-2.0m
RPs AAD (£)	£0										
NRPs (no.)	2	2		0	0	0		0	0	0	
NRPs 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

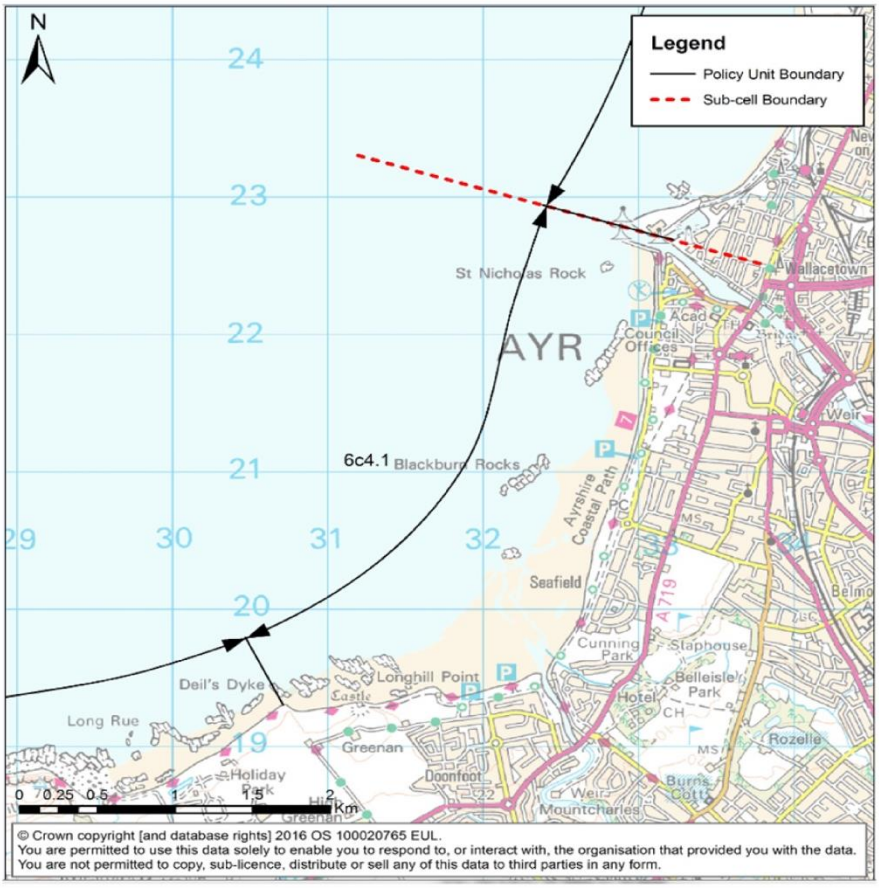
Issue

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

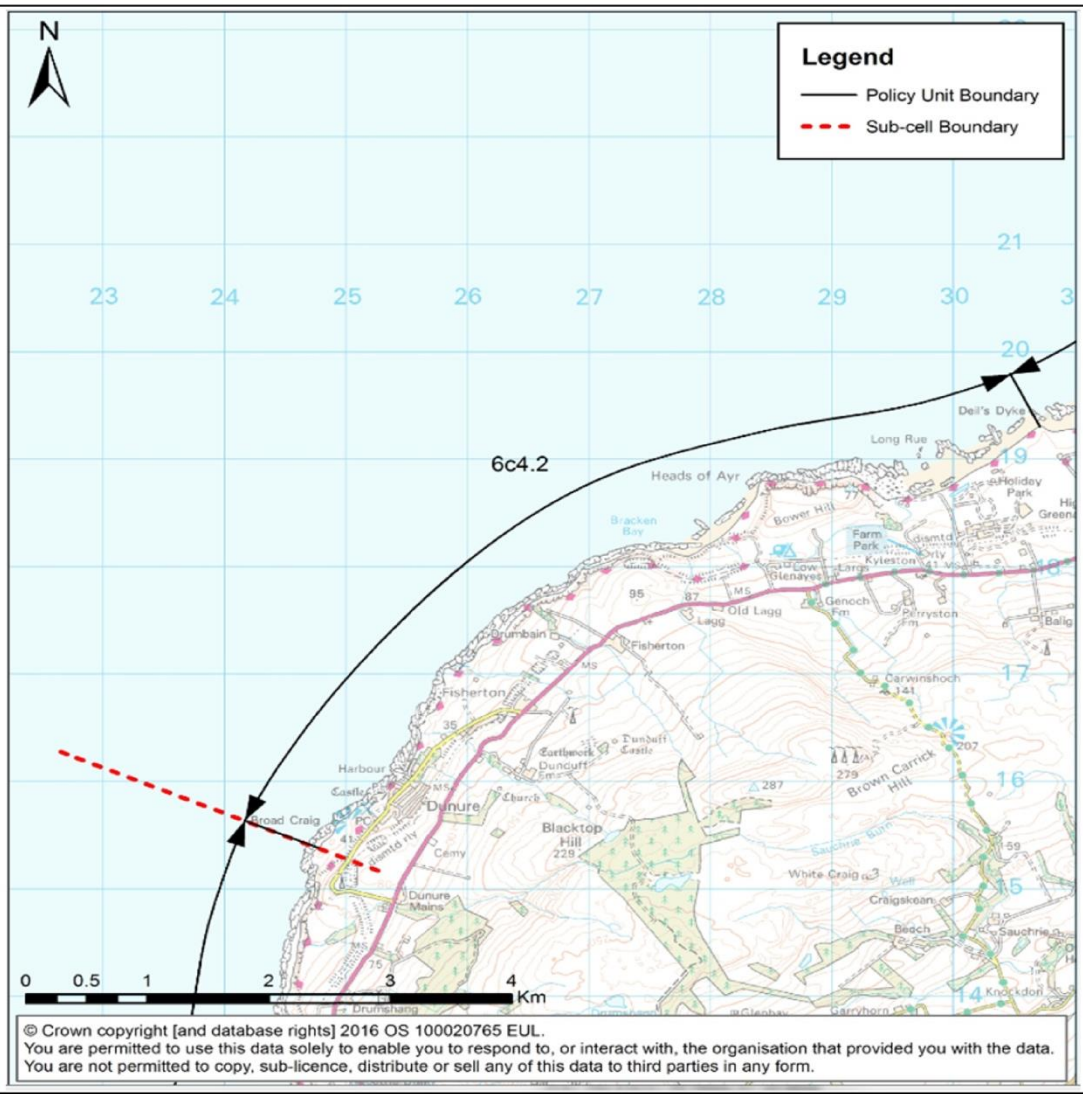
Issue

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	×	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 6c5: Dunure - Turnberry

RISKS

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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 (km^2)	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

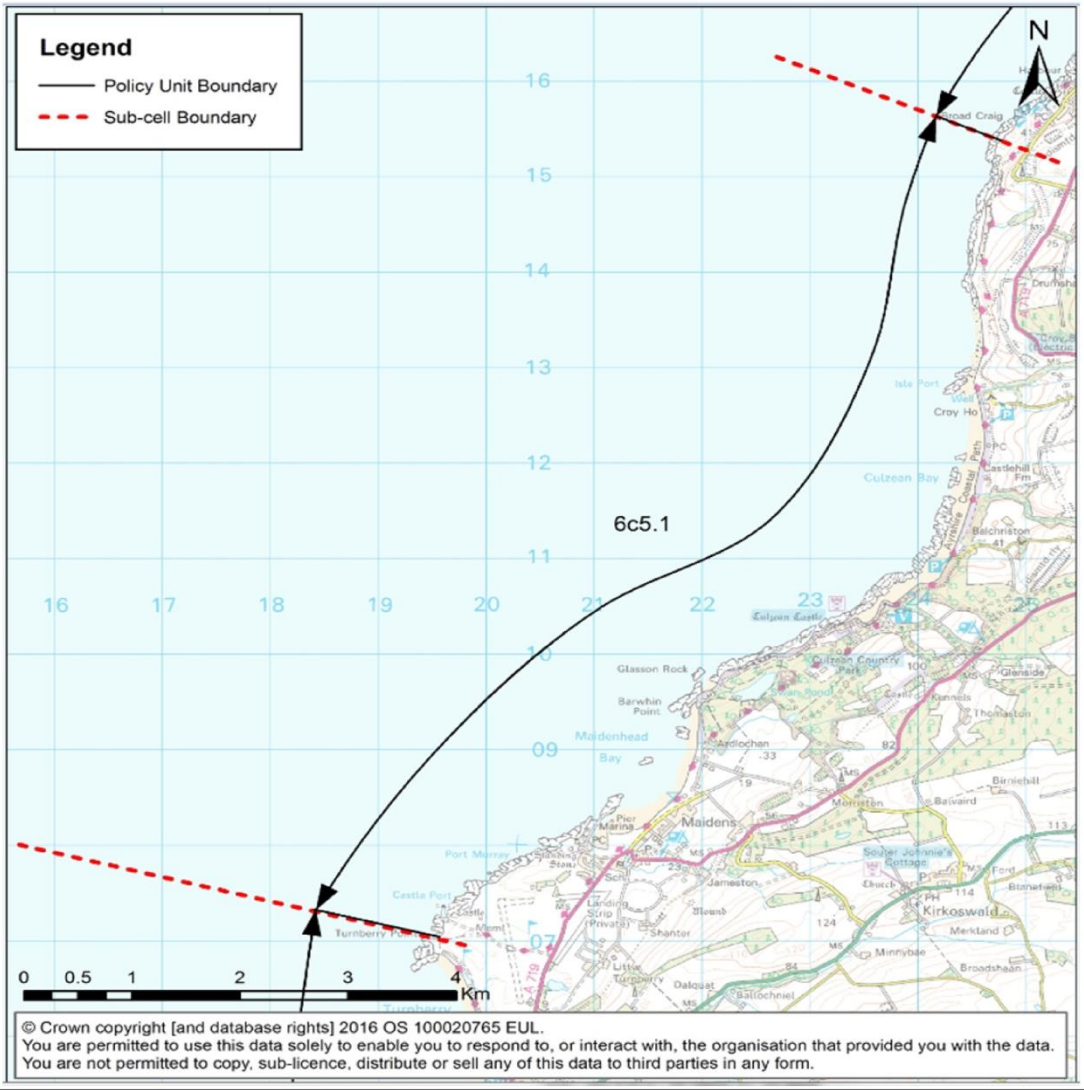
Issue

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	×	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. 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	8	15		0	0	0		0	0	0	1.5-2.0m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	1	2		0	0	0		0	0	0	1.5-2.0m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	7	13		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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 (km^2)	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

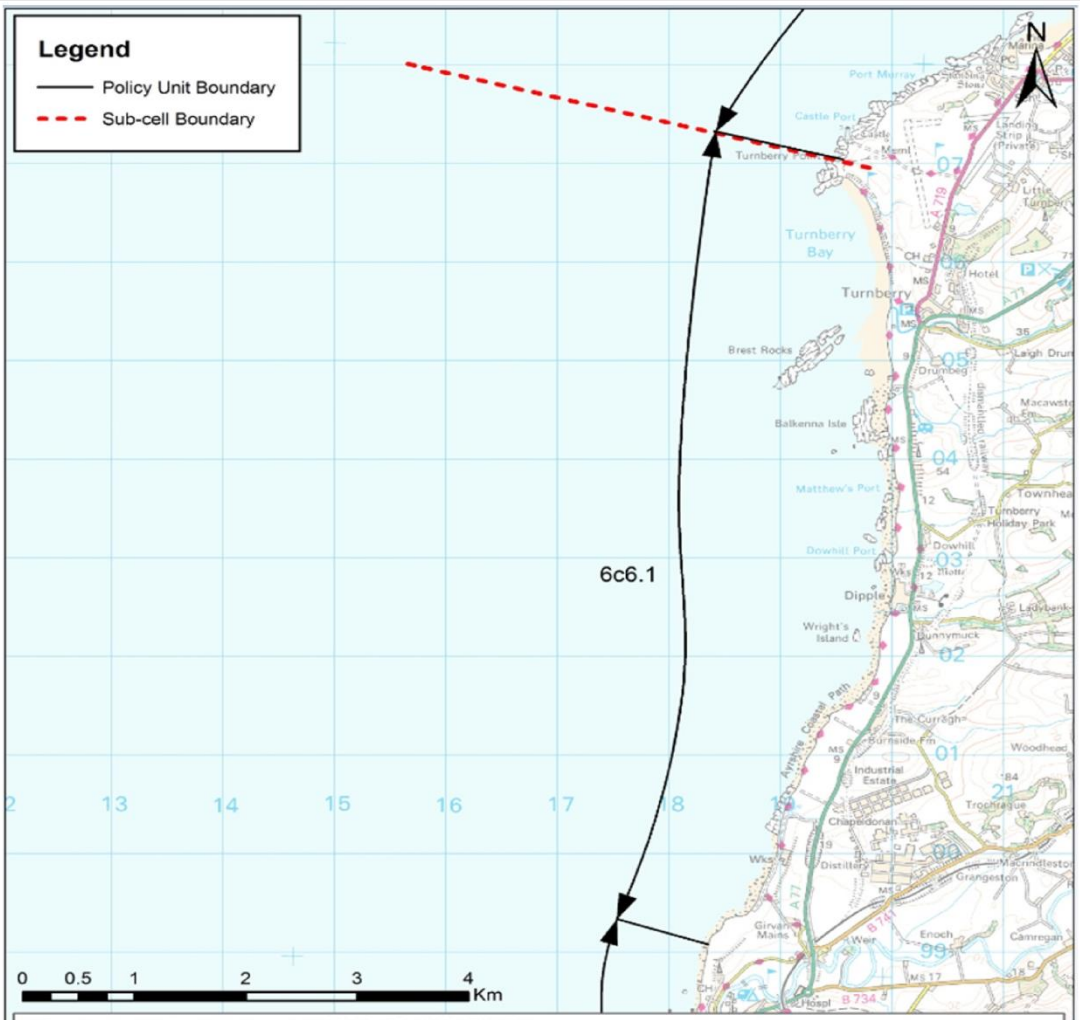
Issue

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	×	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. This section of coastline is potentially important as a sediment source.



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Subcell	Policy unit
6c6	**6c6.2**
Turnberry - Bennane Head	**Girvan**

Policy

Hold the line

Issue

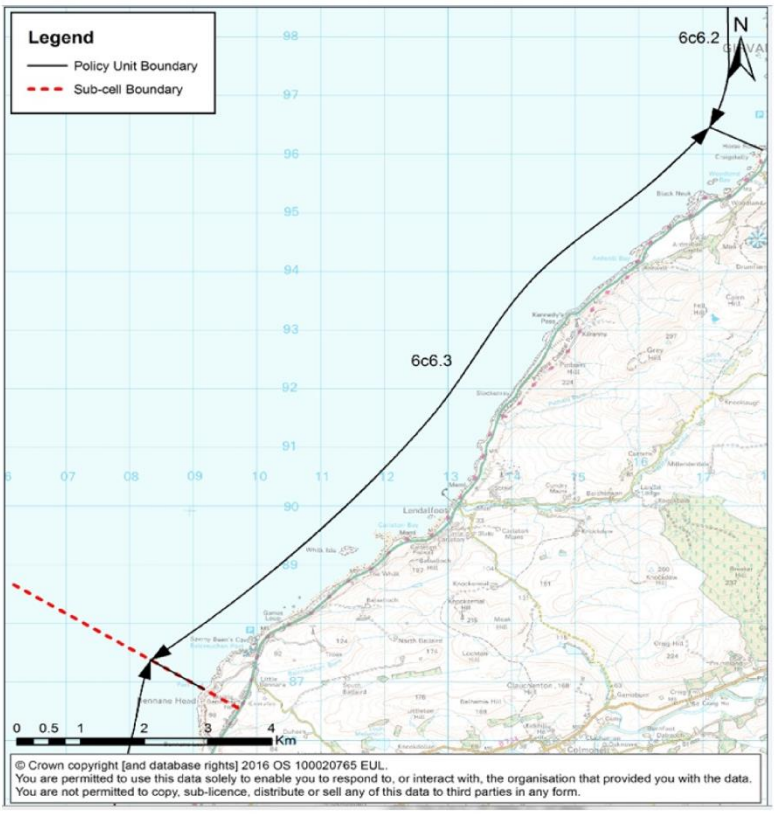
Significant coastal flood risk adjacent to the Water of Girvan and A77. Significant joint fluvial and coastal flod risk with the Water of Girvan and Mill Burn. Erosion risk at Girvan golf course. The maximum wave height during a force 8 storm was found to be less than 1.0m.

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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	0	0		0	0	0		0	0	1	1.5-2.0m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	0	0		0	0	0		0	0	1	1.0-1.5m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	0	0		0	0	0		0	0	0	1.5-2.0m
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	0.026		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

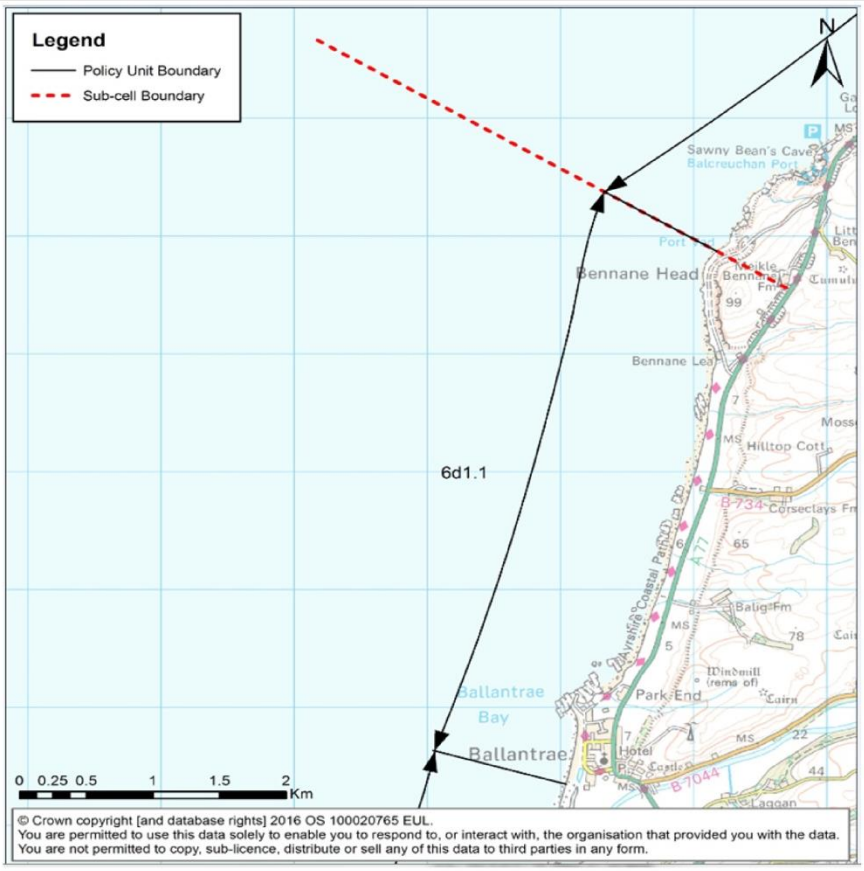
Issue

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

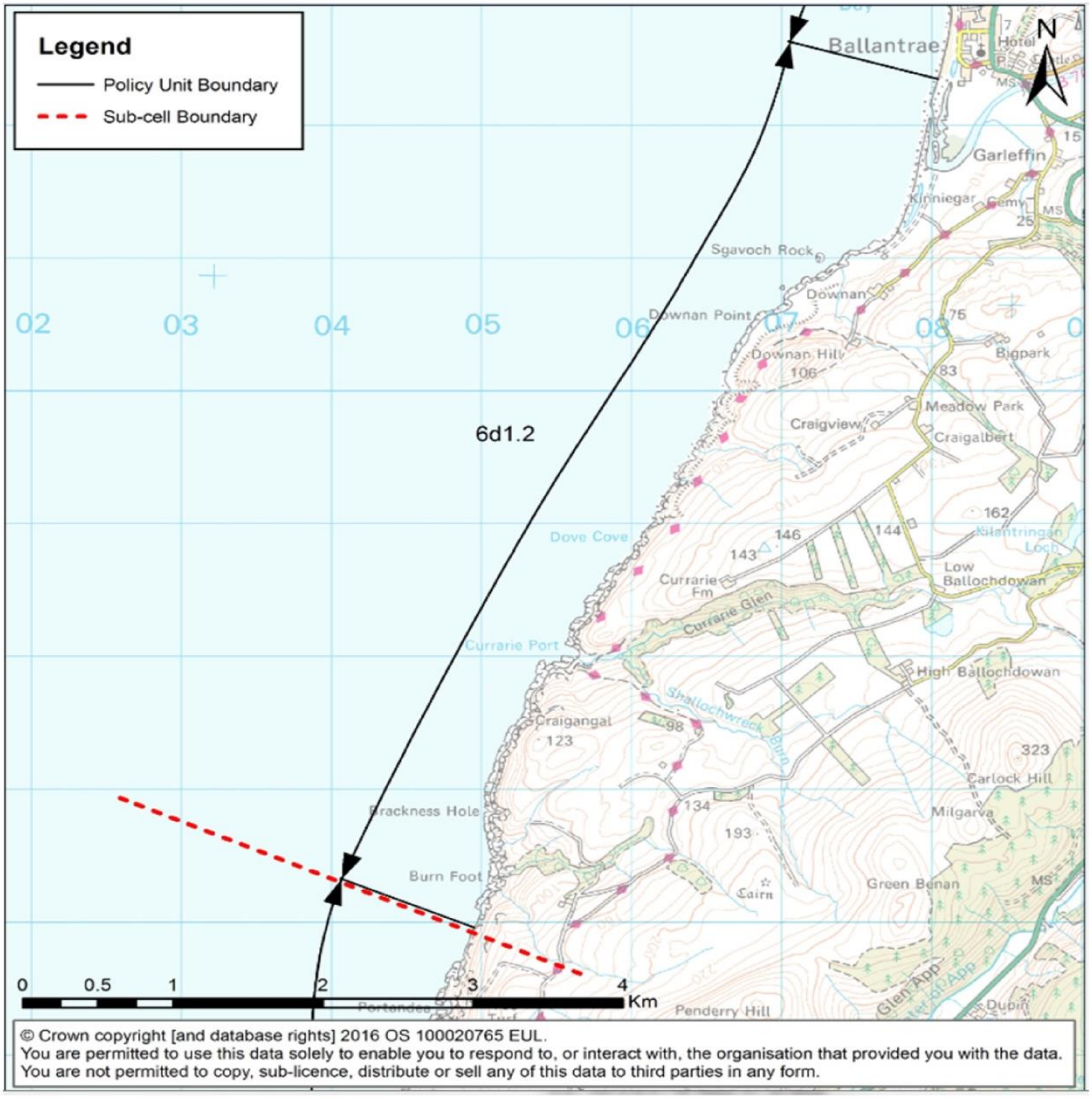
Issue

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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	137	257		0	0	0		0	0	0	1.5-2.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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	1.5-2.0m
RPs 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

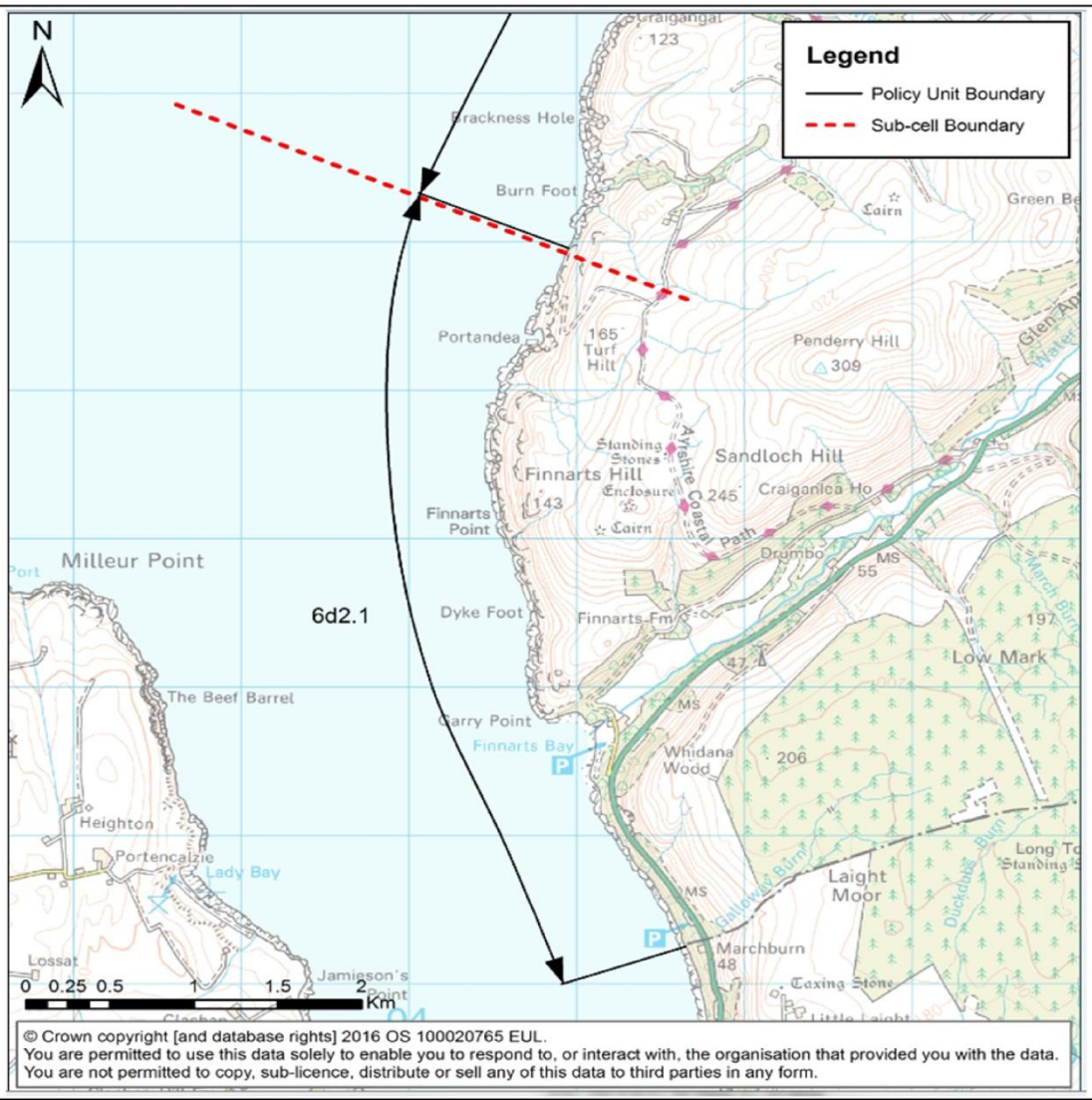
Issue

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	×	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. NRP at Finnarts Bay is abandoned.



Sub-Cell A1: Lochranza - Clauchlands Point

RISKS

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	17	48		0	0	0		0	0	1	<1.0m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	6	8		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
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 (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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	2	3		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	9	37		0	0	0		0	0	1	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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 (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

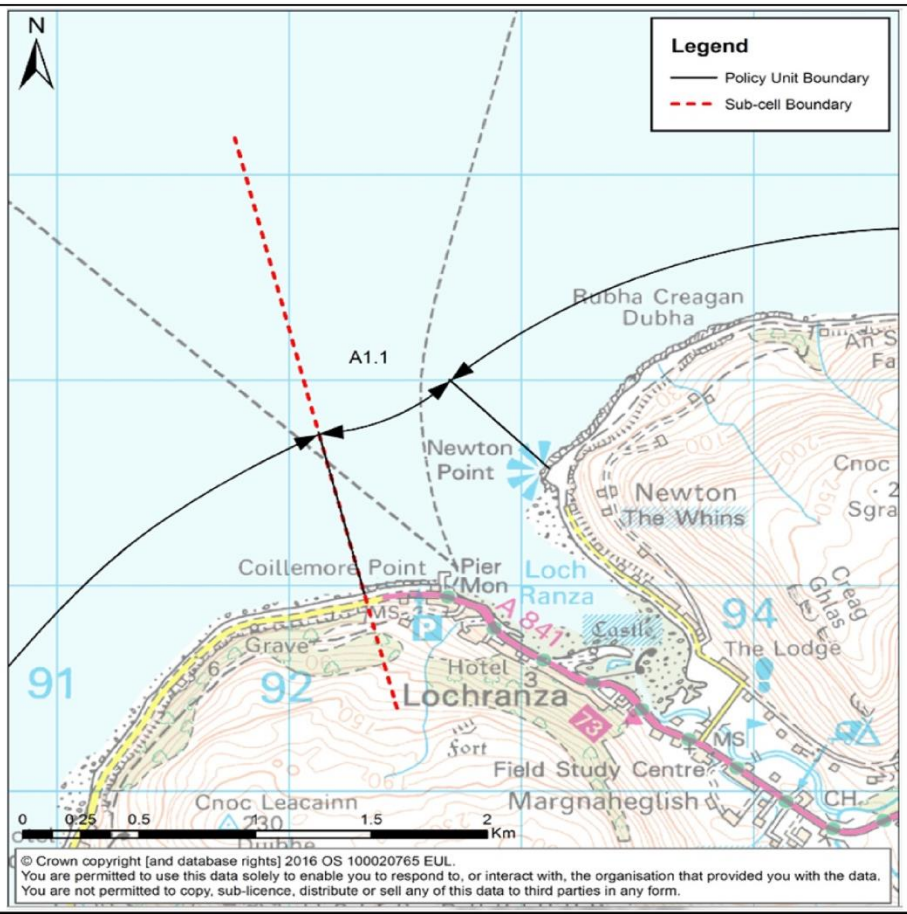
Issue

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 occuring 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

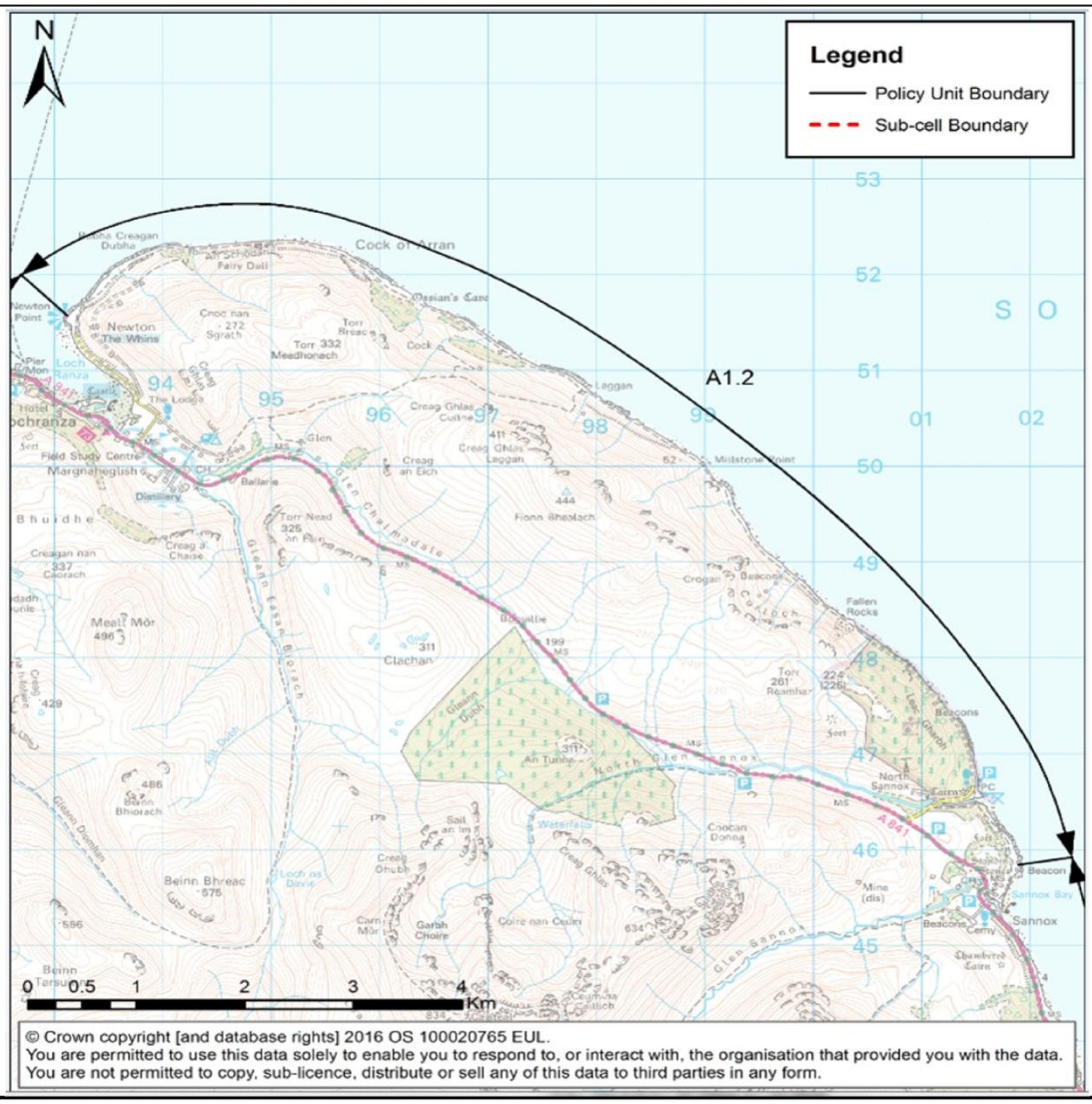
Issue

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

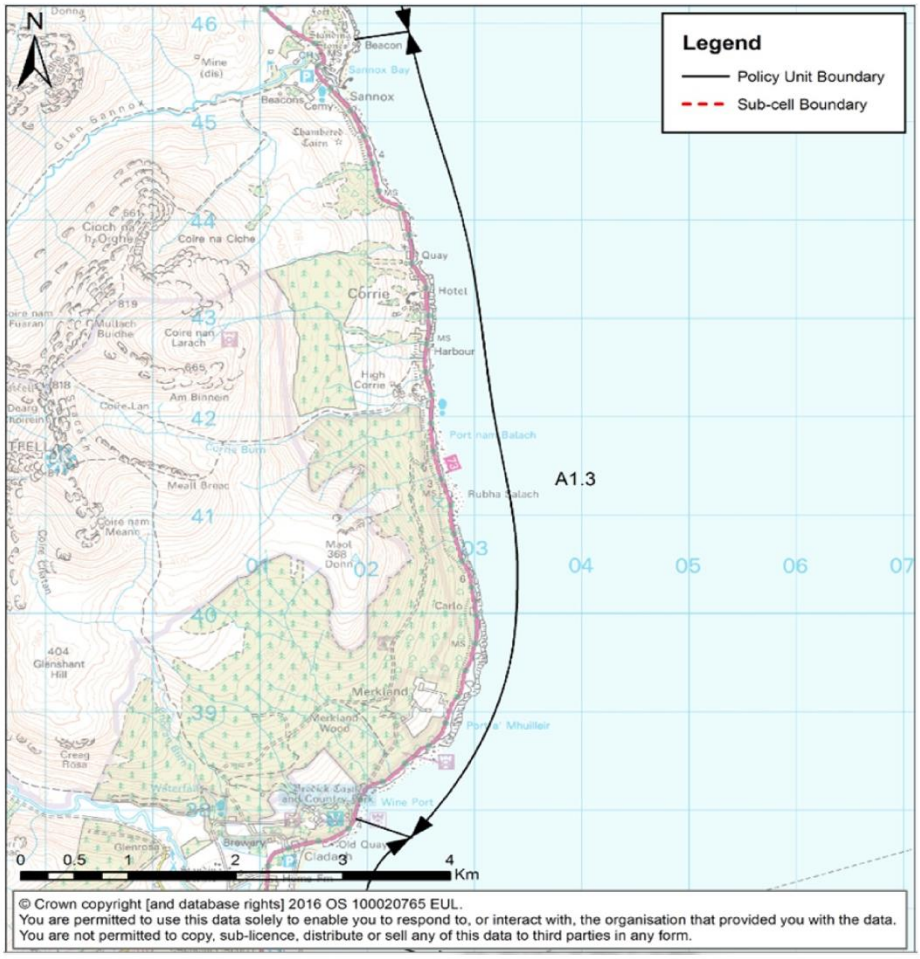
Issue

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	**Brodick**

Policy

Hold the line

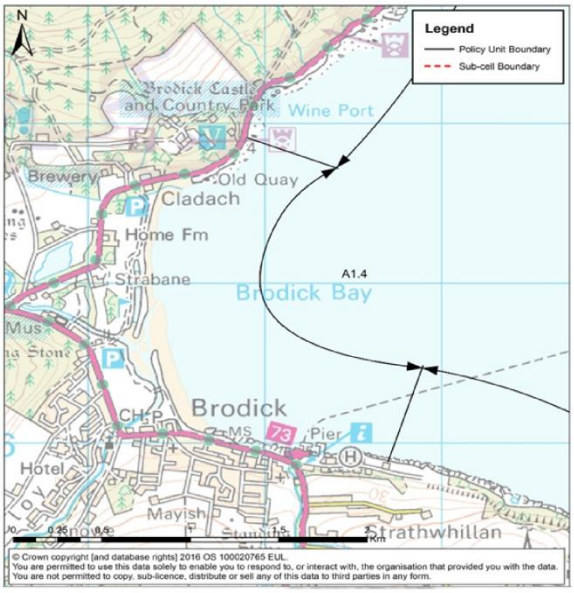
Issue

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.



Subcell	Policy unit
A1	**A1.5**
Lochranza - Clauchlands Point	**Brodick to Clauchlands Point**

Policy

No active intervention

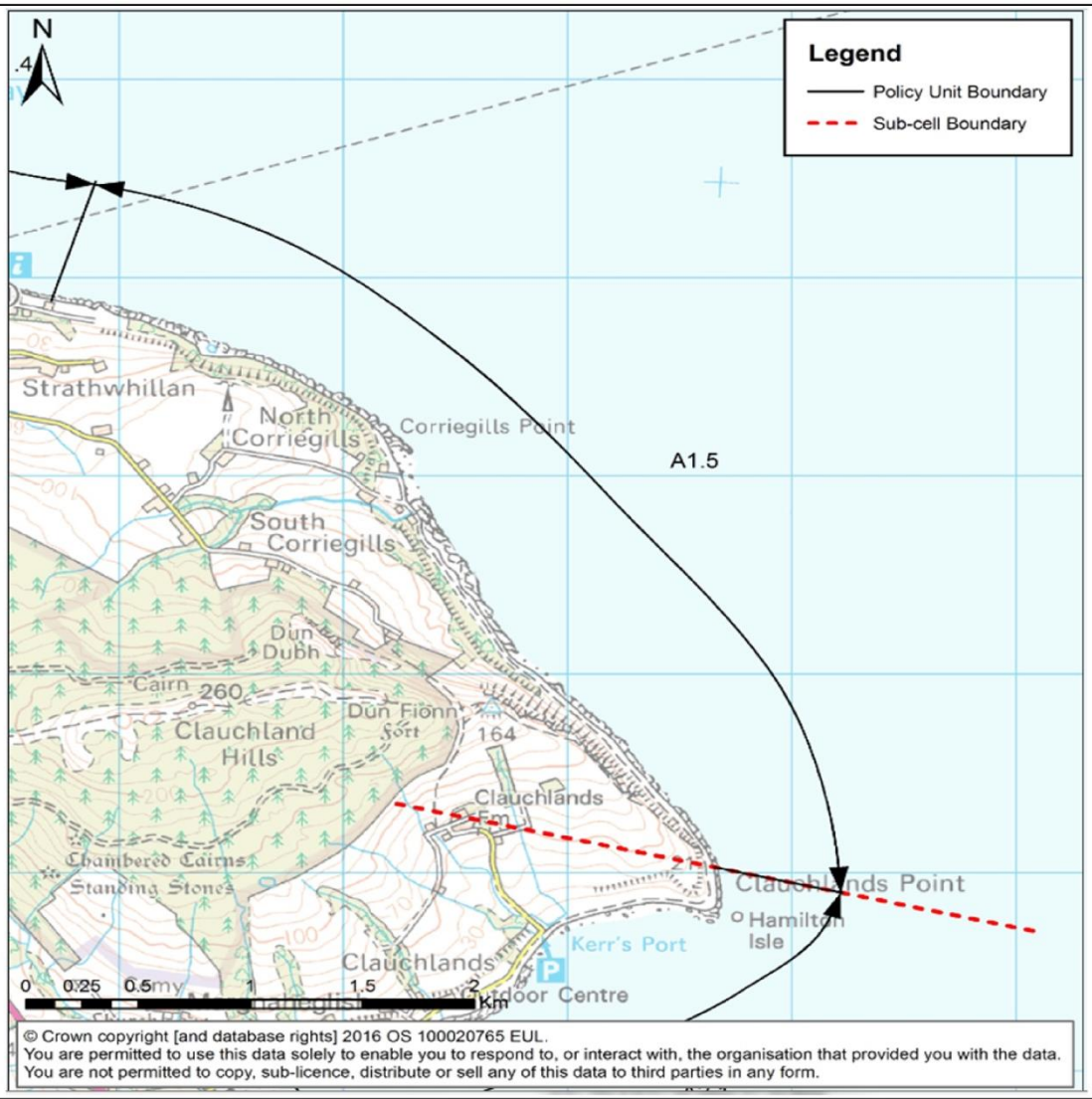
Issue

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	×	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 A2: Clauchlands Point - Kingscross Point

RISKS

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	21	38		0	0	4		0	1	5	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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)	0.121	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

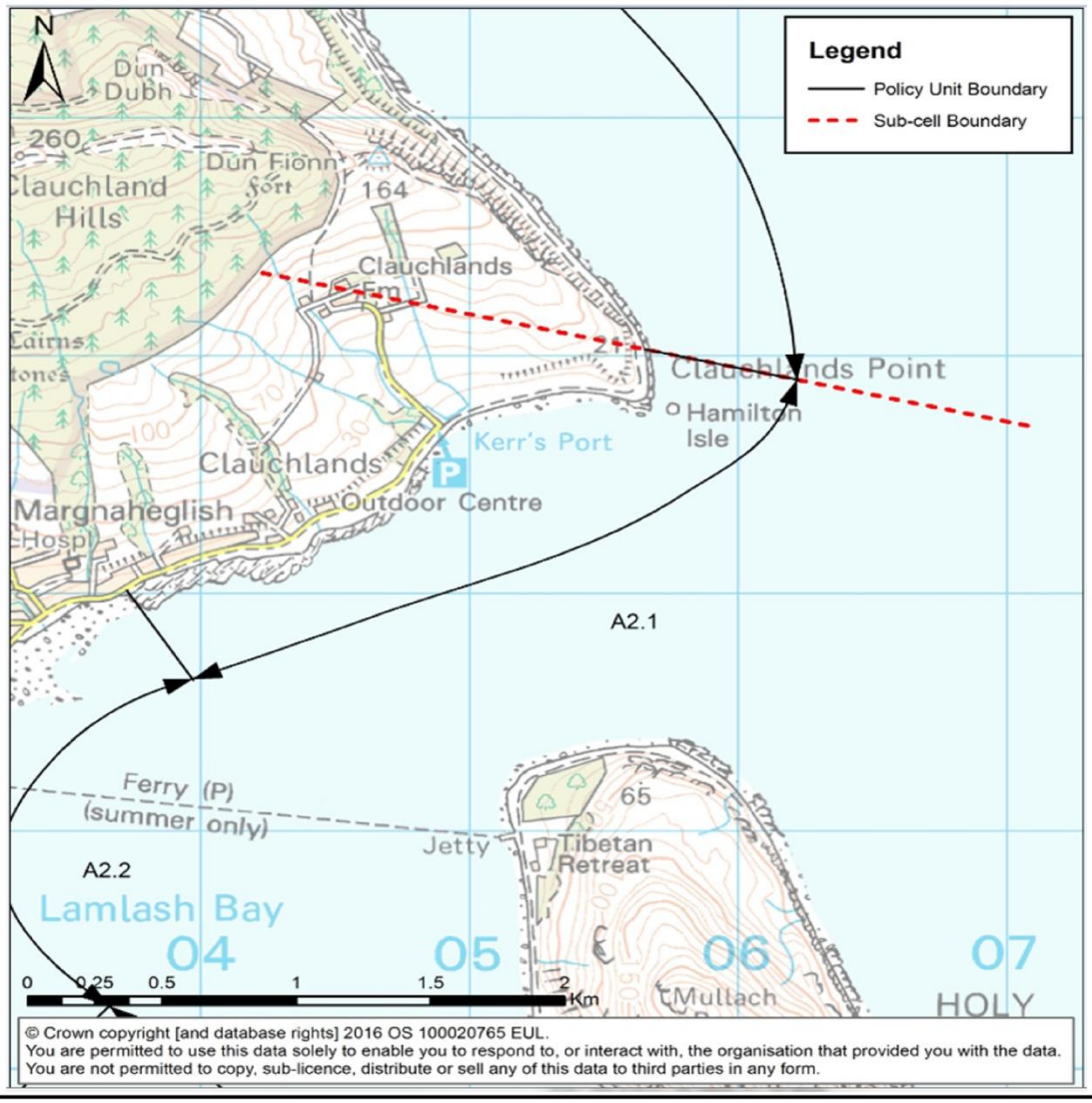
Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	21	38		0	0	4		0	1	5	<1.0m
RPs 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: Lamlash to Kingscross Point

RISKS

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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 (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		
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	×	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.					



Subcell	Policy unit
A2	**A2.2**
Clauchlands Point - Kingscross Point	**Lamlash**

Policy

Hold the line

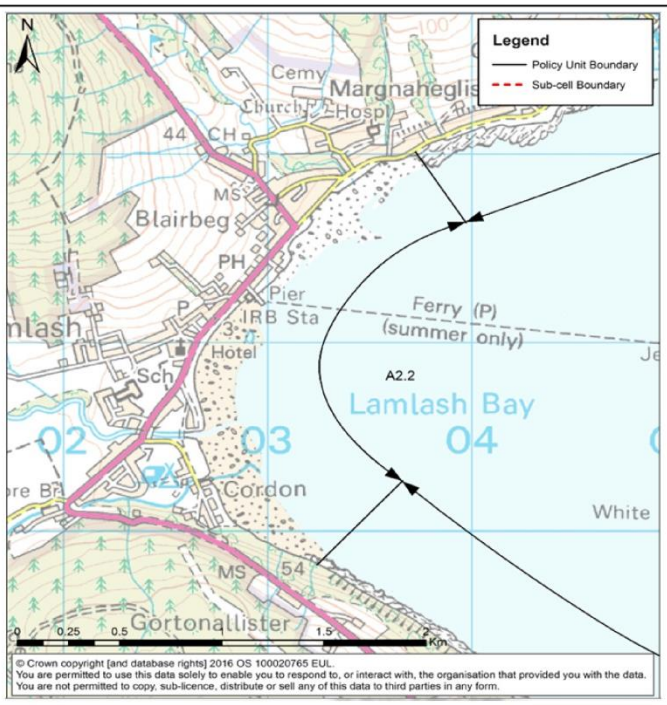
Issue

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 ,aintained 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

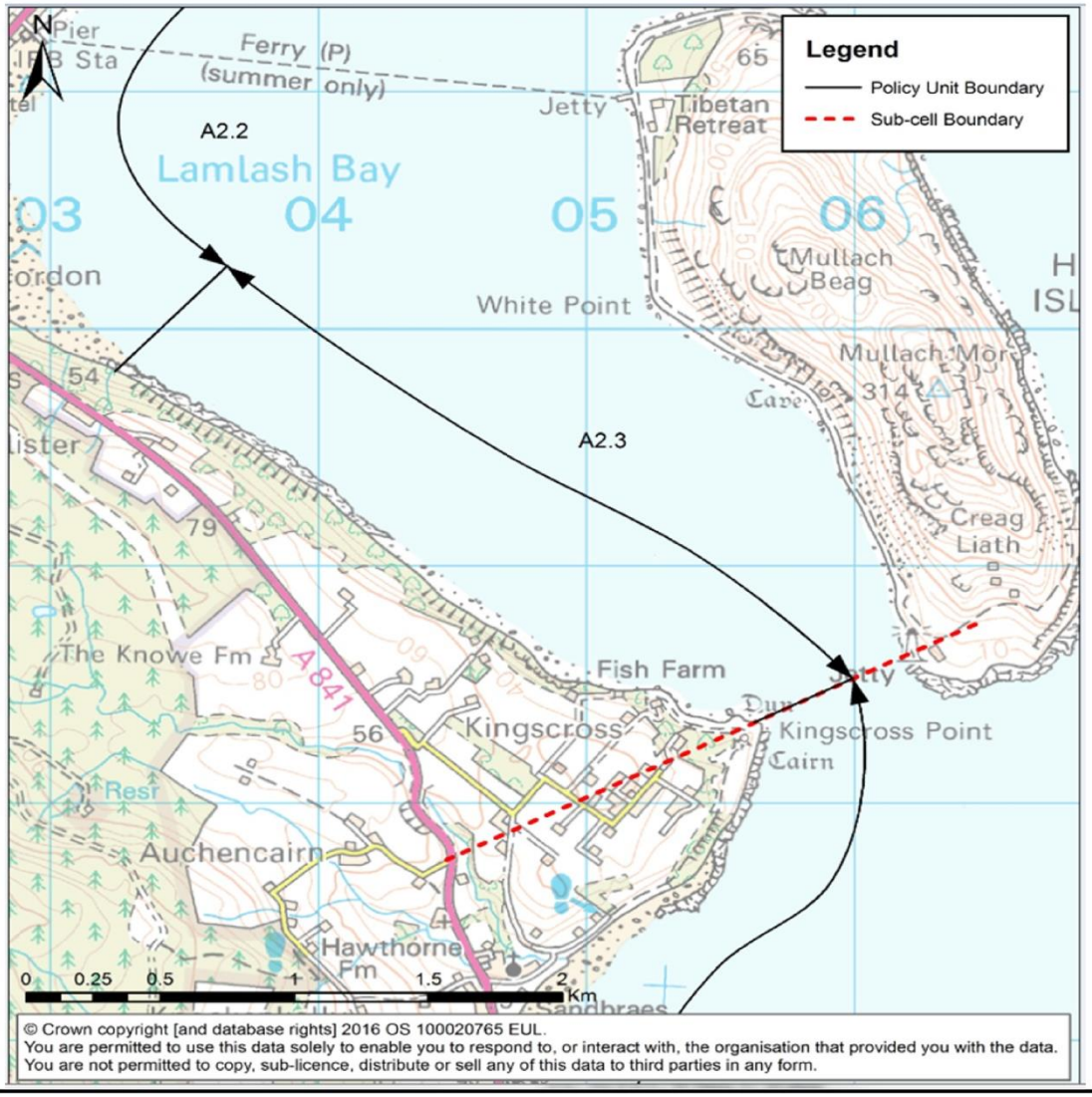
Issue

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	×	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 A3: Kingscross Point - Drumadoon Point

RISKS

Receptor Risk	Coastal Flooding		Accretion / Erosion								Wave
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	19	34		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	18	23		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	
RPs (no.)	1	11		0	0	0		0	0	0	<1.0m
RPs 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 occuring 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

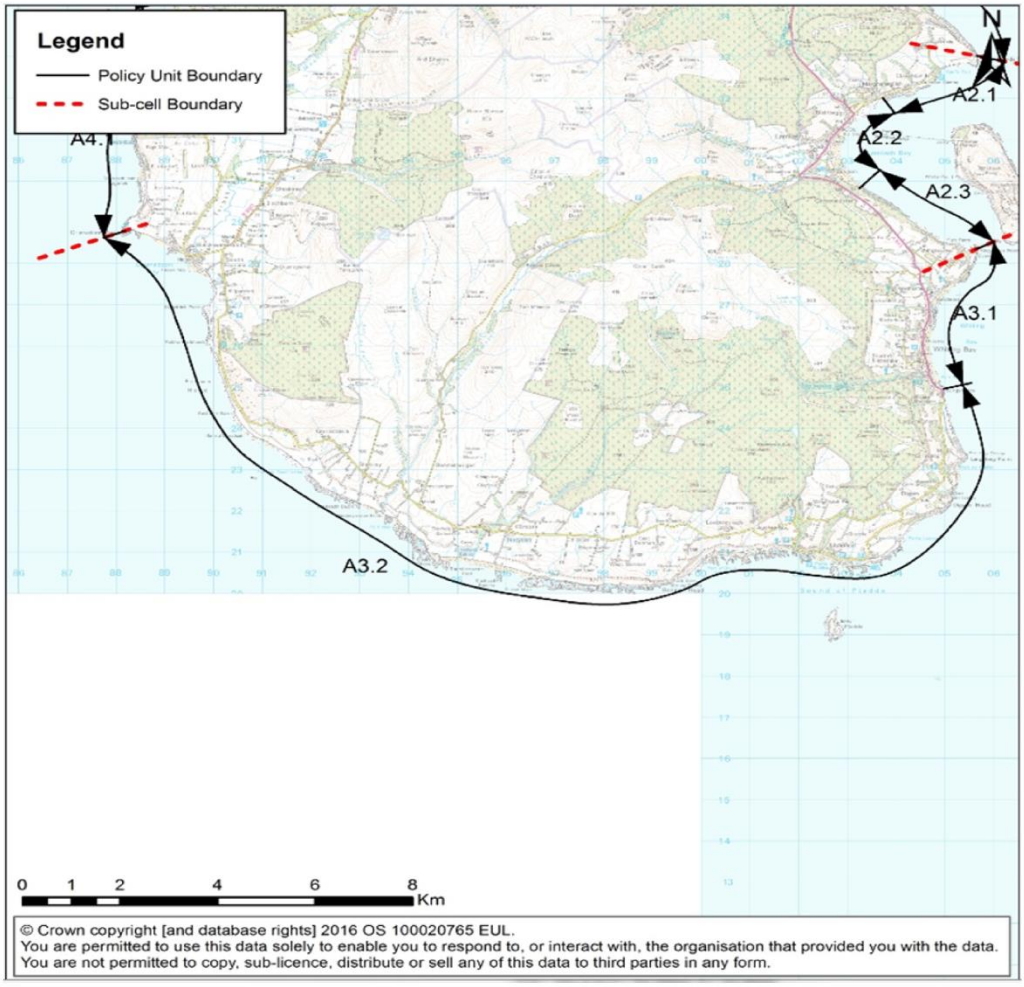
Issue

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.

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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	1	1		0	0	0		0	0	0	<1.0m
RPs 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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
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 (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
			2050				2100				
	200yr	200yr CC	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Accretion	Erosion	Erosion Influence (10m)	Erosion Vicinity (60m)	Max. Significant Wave Height (Hm0)
RPs (no.)	1	1		0	0	0		0	0	0	<1.0m
RPs 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

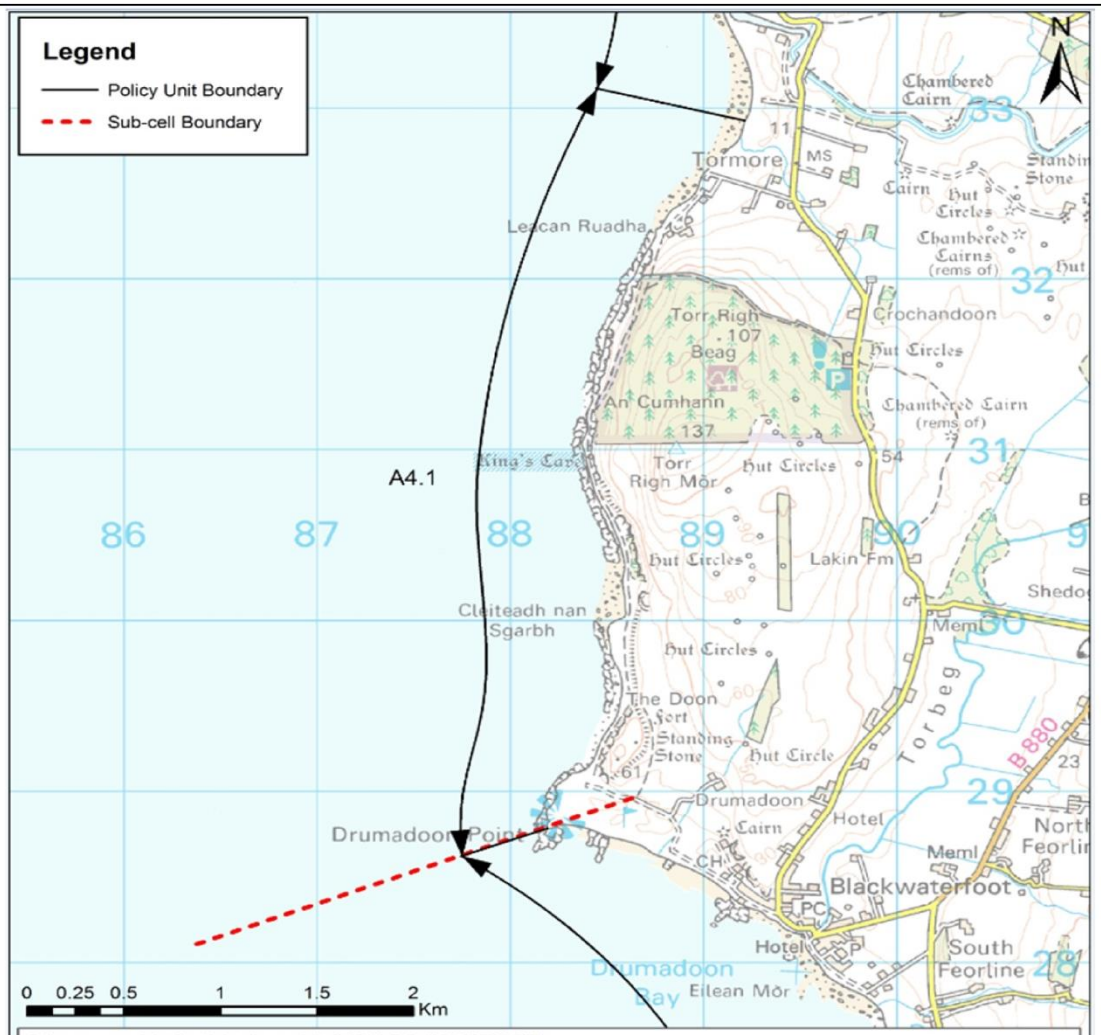
Issue

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.



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Subcell	Policy unit
A4	**A4.2**
Drumadoon Point - Lochranza	**Machrie Bay to Lochranza**

Policy

Hold the line

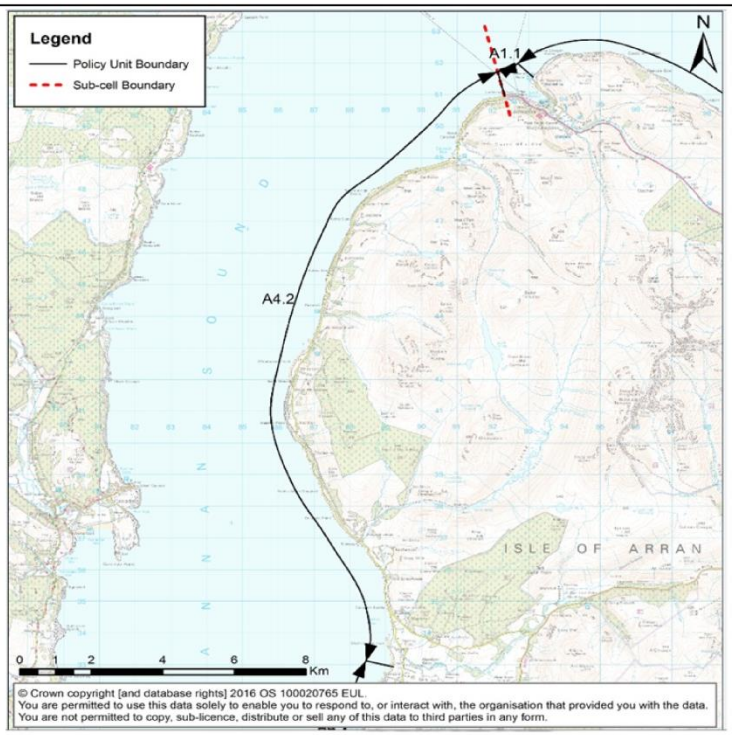
Issue

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
			2050				2100				Max. Significant Wave Height (Hm0)
	200yr	200yr CC	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 (km^2)	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**

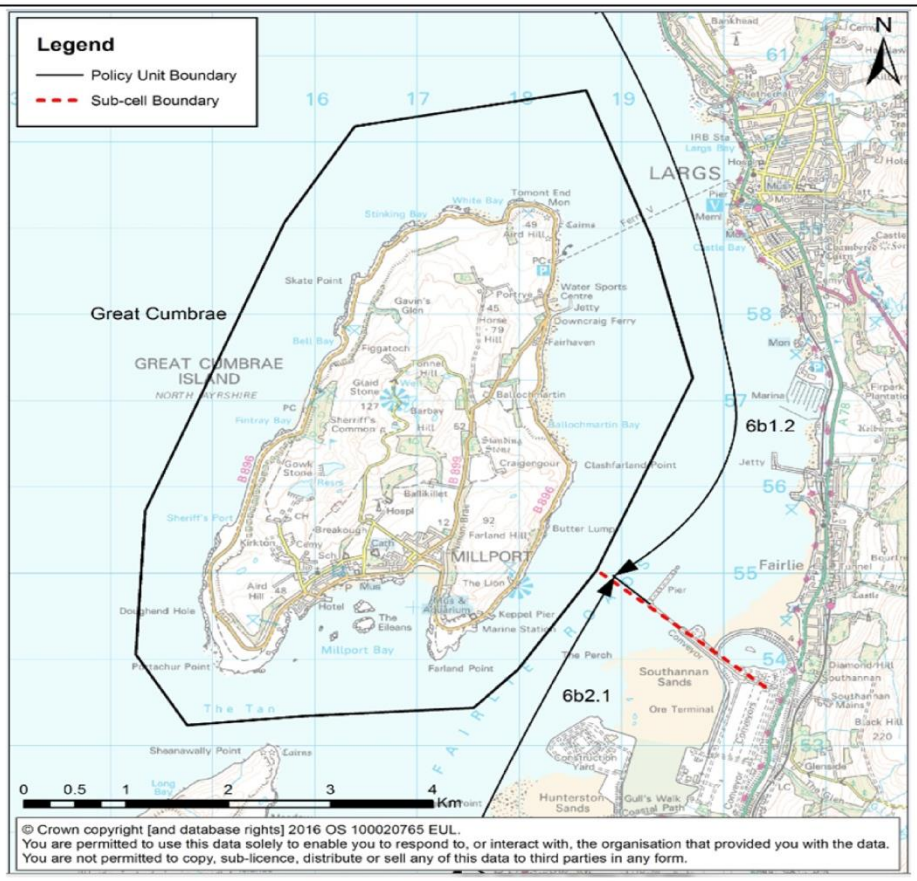
Policy

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 occuring 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.