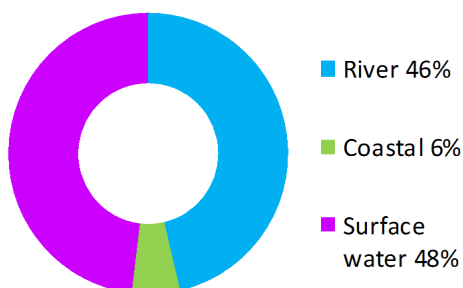


## Shetland Mainland Central and South (Potentially Vulnerable Area 04/03)

Local Plan District	Local authority	Main catchment
Shetland	Shetland Islands Council	Shetland coastal

### Summary of flooding impacts



#### At risk of flooding

- <10 residential properties
- 10 non-residential properties
- £43,000 Annual Average Damages

(damages by flood source shown left)

Summary of flooding impacts

### Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Objectives

### Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

<i>Flood protection scheme/works</i>	<i>Natural flood management works</i>	<i>New flood warning</i>	<i>Community flood action groups</i>	<i>Property level protection scheme</i>	<i>Site protection plans</i>
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Actions

# Shetland Mainland Central and South (Potentially Vulnerable Area 04/03)

Local Plan District	Local authority	Main catchment
Shetland	Shetland Islands Council	Shetland coastal

## Background

This Potentially Vulnerable Area is located in central and south Mainland Shetland. It is approximately 150km<sup>2</sup> (shown below).

The area is predominantly rural with many small burns and lochs. The coastline is characterised by bays, inlets and voes.

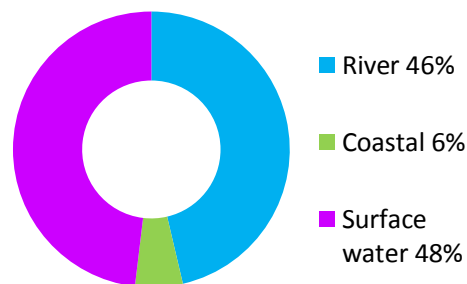


© Crown copyright. SEPA licence number 100016991 (2015). All rights reserved.

There are several towns and villages in this Potentially Vulnerable Area, including Lerwick and settlements at Sumburgh Scalloway and Sandwick. Sumburgh Airport and the main A970 road that links Lerwick to the airport are also within the area.

There are fewer than 10 residential and approximately 10 non-residential properties at risk of flooding.

The Annual Average Damages are £43,000 with the majority caused by river and surface water flooding.



**Figure 1:** Annual Average Damages by flood source

## Summary of flooding impacts

River flood risk occurs on the Burn of Mail and Burn of Laxdale in Cunningsburgh. There are localised areas of surface water flood risk associated with smaller burns and lochs. Coastal flood risk is predominantly limited to a narrow coastal strip in areas such as Hays Dock, Lerwick. Flooding from wave action is not fully represented in the assessment of flood risk and the number of properties at risk and the damages from coastal flooding may be underestimated as a result.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads, including the A970, are at risk from flooding leading to disruption in access between towns and to Sumburgh Airport and Lerwick Port. Surface water flooding affects a small area of the airport runway potentially causing disruption to flights. There are 18 designated cultural heritage sites and small areas of environmental

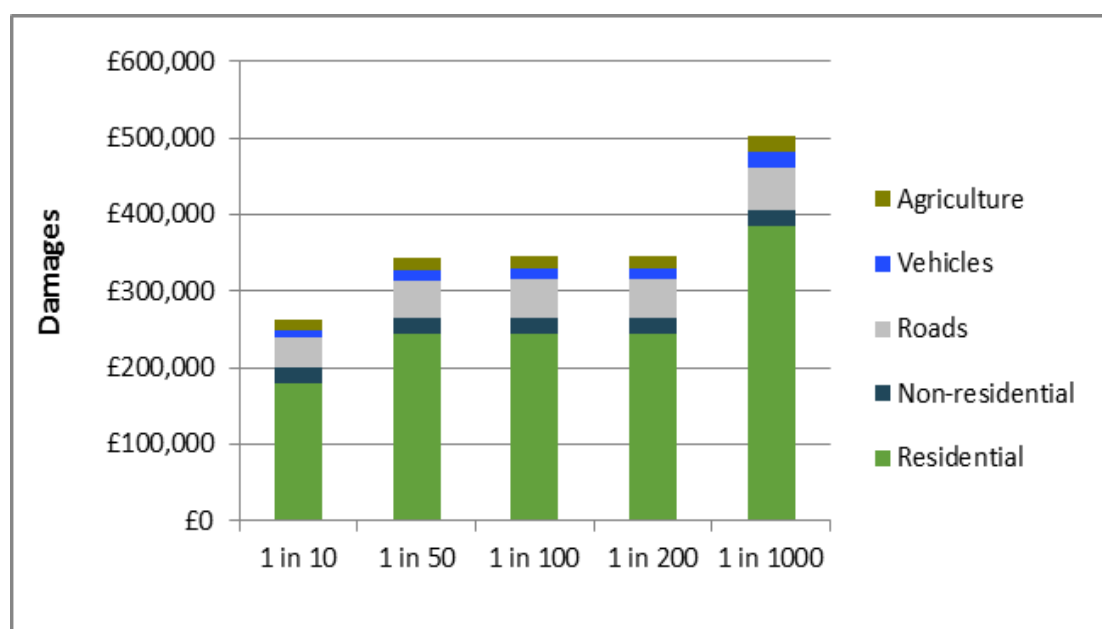
importance at risk. These include the Lochs of Spiggie and Brow Special Protection Area, Aith Meadows and the Burn of Aith Site of Special Scientific Interest.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to roads.

The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 5,400)	<10	<10	<10
Non-residential properties (total 1,200)	<10	10	10
People	<10	10	20
Community facilities	0	0	0
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	Roads at 60 locations Sumburgh Airport	Roads at 70 locations Sumburgh Airport	Roads at 70 locations Sumburgh Airport
Environmental designated areas (km <sup>2</sup> )	0.4	0.5	0.5
Designated cultural heritage sites	12	18	19
Agricultural land (km <sup>2</sup> )	0.9	1	1

**Table 1:** Summary of flooding impacts<sup>1</sup>



**Figure 2:** Damages by flood likelihood

<sup>1</sup> Some receptors are counted more than once if flooded from multiple sources

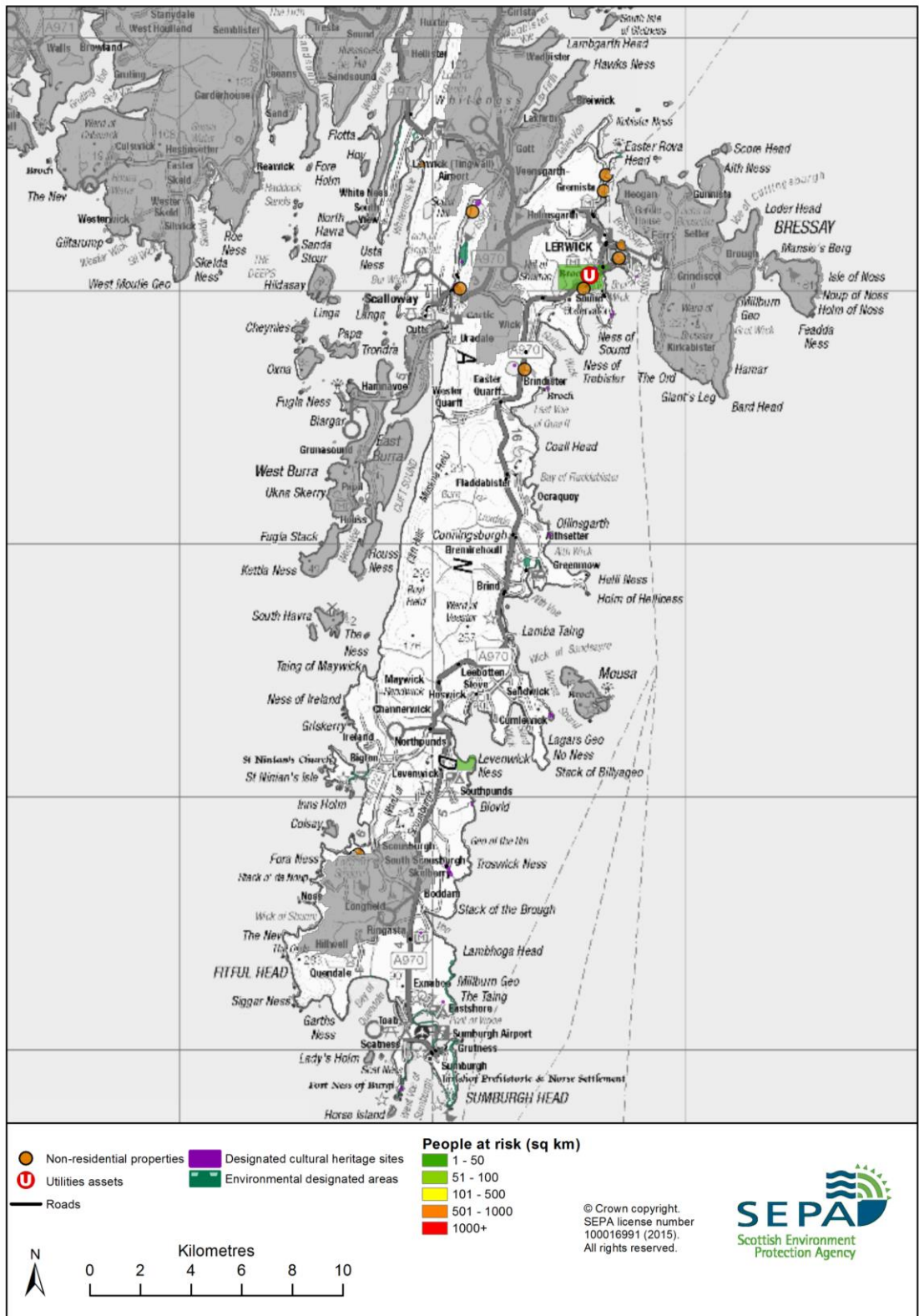


Figure 3: Impacts of flooding

## History of flooding

The earliest recorded flood in this Potentially Vulnerable Area was from the sea in 1900, which flooded the harbour and Clickimin areas of Lerwick. Multiple coastal floods have since been recorded, resulting in damage to existing coastal defences and a number of properties being affected.

There have been 16 river and surface water floods since 2003, the majority of which have affected properties. Many of the floods were caused by hill runoff and blockages of drainage infrastructure, such as ditches and gullies. Groundwater flooding occurred in 2004 and 2006 in addition to hill runoff.

The road between Lerwick and the airport at Sumburgh has been affected in the past by landslips (bog and peat slides) during periods of very intense rainfall. There have been flooding problems from the Burns of Laxdale and Mail in Cunningsburgh.

## Objectives to manage flooding in Potentially Vulnerable Area 04/03

Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Shetland Mainland Central and South Potentially Vulnerable Area.

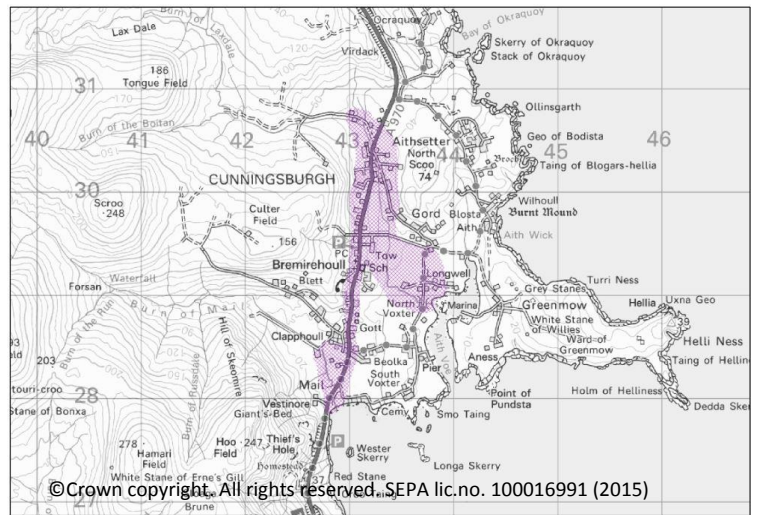
### Reduce risk in the Cunningsburgh area from river and surface water flooding

Indicators:

- A970 road at Cunningsburgh

Target area:

Objective ID: 400301



Target area	Objective	ID	Indicators within PVA
Lerwick and Scalloway	Reduce risk from surface water flooding in Lerwick and Scalloway	400305	* See note below
Applies across Shetland Local Plan District	Avoid an overall increase in flood risk	400001	<ul style="list-style-type: none"> <li>• &lt;10 residential properties</li> <li>• £43,000 Annual Average Damages</li> </ul>
Applies across Shetland Local Plan District	Reduce overall flood risk	400002	<ul style="list-style-type: none"> <li>• &lt;10 residential properties</li> <li>• £43,000 Annual Average Damages</li> </ul>
Applies across Shetland Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

\* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 04/03 there are <10 residential properties at risk and Annual Average Damages of £20,000.

## Actions to manage flooding in Potentially Vulnerable Area 04/03

Actions describe where and how flood risk will be managed. These actions have been set by SEPA and agreed with flood risk management authorities following consultation. Selection of actions to deliver the agreed objectives was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Shetland Mainland Central and South Potentially Vulnerable Area.

Selected actions					
<i>Flood protection scheme/works</i>	<i>Natural flood management works</i>	<i>New flood warning</i>	<i>Community flood action groups</i>	<i>Property level protection scheme</i>	<i>Site protection plans</i>
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

<b>Action (ID):</b>	<b>FLOOD PROTECTION STUDY (4003010005)</b>		
<b>Objective (ID):</b>	Reduce risk in the Cunningsburgh area from river and surface water flooding (400301)		
<b>Delivery lead:</b>	Shetland Islands Council		
<b>Priority:</b>	National:	Within local authority:	
	<b>156 of 168</b>	<b>3 of 3</b>	
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	The A970 is the key road linking the southern end of the mainland, including the airport at Sumburgh, to the rest of Shetland. Flooding in the Cunningsburgh area causes significant disruption to residents, commuters, and visitors. Therefore a study should be undertaken to assess direct defences upstream of the A970 on the Burn of Laxdale and Burn of Mail and improvements to the conveyance through the culverts underneath the road. Other actions may also be considered to develop the most sustainable range of options.		
<b>Potential impacts</b>			
<b>Economic:</b>	The study should confirm the economic impacts and number of properties at risk. Currently it is estimated that one residential and one non-residential property, along with the A970 (key road linking the southern end of Mainland, including the airport at Sumburgh to the rest of Shetland) are at risk. The history of flooding however suggests that the potential benefits are likely to be higher.		
<b>Social:</b>	The A970 is the key road linking the southern end of Mainland, including the airport at Sumburgh, to the rest of Shetland. Flooding in the Cunningsburgh area causes significant disruption to residents, commuters and visitors. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and		



<b>Social:</b>	socially vulnerable people. Negative impacts through disturbance to the local community during the construction phase should be considered.
<b>Environmental:</b>	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for improving the culverts beneath the A970 for habitats and fish passage. The proposed works and the burns which they affect are located outside of the Aith Meadows and Burn of Aith Site of Special Scientific Interest.

<b>Action (ID):</b>	<b>SURFACE WATER PLAN/STUDY (4003050018)</b>		
<b>Objective (ID):</b>	Reduce risk from surface water flooding in Lerwick and Scalloway (400305)		
<b>Delivery lead:</b>	Shetland Islands Council		
<b>Status:</b>	<b>Ongoing</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.		

<b>Action (ID):</b>	<b>STRATEGIC MAPPING AND MODELLING (4000020019)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (400002)		
<b>Delivery lead:</b>	Scottish Water		
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

<b>Action (ID):</b>	<b>FLOOD FORECASTING (4000020009)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (400002)		
<b>Delivery lead:</b>	SEPA		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<p>The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.</p> <p>The Potentially Vulnerable Area is within the 'Shetland' flood alert area.</p>		

<b>Action (ID):</b>	<b>SELF HELP (4000020011)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (400002)		
<b>Delivery lead:</b>	—		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<p>Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.</p>		

<b>Action (ID):</b>	<b>AWARENESS RAISING (4000020013)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (400002)		
<b>Delivery lead:</b>	Responsible authorities		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>		

<b>Action (ID):</b>	<b>MAINTENANCE (4000020007)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (400002)		
<b>Delivery lead:</b>	Shetland Islands Council, asset / land managers		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.		

<b>Action (ID):</b>	<b>EMERGENCY PLANS/RESPONSE (4000020014)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (400002)		
<b>Delivery lead:</b>	Category 1 and 2 Responders		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations.		

<b>Action (ID):</b>	<b>PLANNING POLICIES (4000010001)</b>		
<b>Objective (ID):</b>	Avoid an overall increase in flood risk (400001)		
<b>Delivery lead:</b>	Planning authority		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		