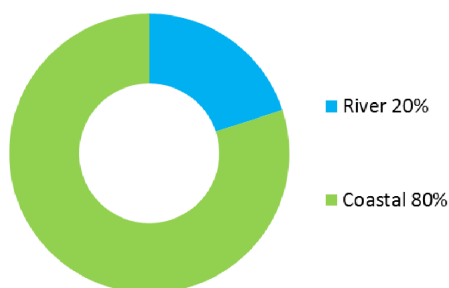


Benbecula (Potentially Vulnerable Area 02/06)

Local Plan District	Local authority	Main catchment
Outer Hebrides	Comhairle nan Eilean Siar	Benbecula coastal

Summary of flooding impacts



At risk of flooding

- 110 residential properties
- 10 non-residential properties
- £560,000 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.

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

Actions

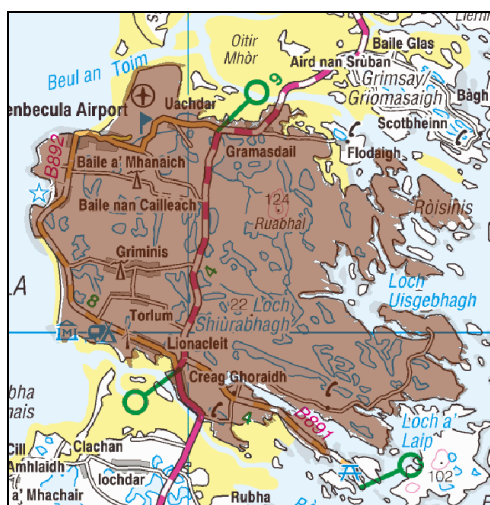
Benbecula (Potentially Vulnerable Area 02/06)

Local Plan District	Local authority	Main catchment
Outer Hebrides	Comhairle nan Eilean Siar	Benbecula coastal

Background

This Potentially Vulnerable Area comprises the entire island of Benbecula (shown below). It is approximately 76km².

The area is low-lying with numerous lochs. It is fringed by dunes to the west.



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

The main access route, the A865, runs down the centre of the island with minor roads and small, populated areas located mainly to the west. The airport is located close to the coast on the north west of the island.

There are approximately 110 residential properties and 10 non-residential properties at risk of flooding.

The Annual Average Damages are estimated to be £560,000 with the majority caused by coastal flooding.

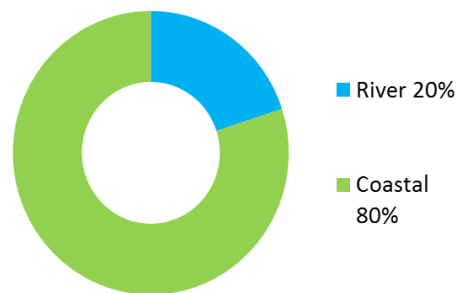


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Coastal flood risk extends northwards from Creagorry across the populated areas to Balivanich with a second area of risk east of the airport around Uachdar and Gramsdale. River flooding is associated with drainage from lochs which flow out to sea through Balivanich. Maintenance of the Benbecula Main Drain and its outfalls is shared between Stòras Uibhist, Scottish Government Rural Payments and Inspections Directorate (SGRPID), Scottish Water and local crofters. The main town of Balivanich and other low-lying settlements depend on the drain and outfalls functioning correctly.

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.

Five designated cultural heritage sites are at risk of flooding. Environmentally designated sites at risk include Aird and Borge Special Protection Area and West Benbecula Lochs Site of Special Scientific Interest.

The damages associated with floods of different likelihood are shown in Figure 2.

The location of the impacts of flooding is shown in Figure 3. Most of the impacts are to the west of the A865.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 560)	90	110	110
Non-residential properties (total 210)	<10	10	20
People	200	230	240
Community facilities	0	0	0
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	Roads at 50 locations Airport	Roads at 80 locations Airport	Roads at 90 locations Airport
Environmental designated areas (km ²)	0.6	0.6	0.6
Designated cultural heritage sites	5	7	7
Agricultural land (km ²)	5	5.2	5.6

Table 1: Summary of flooding impacts¹

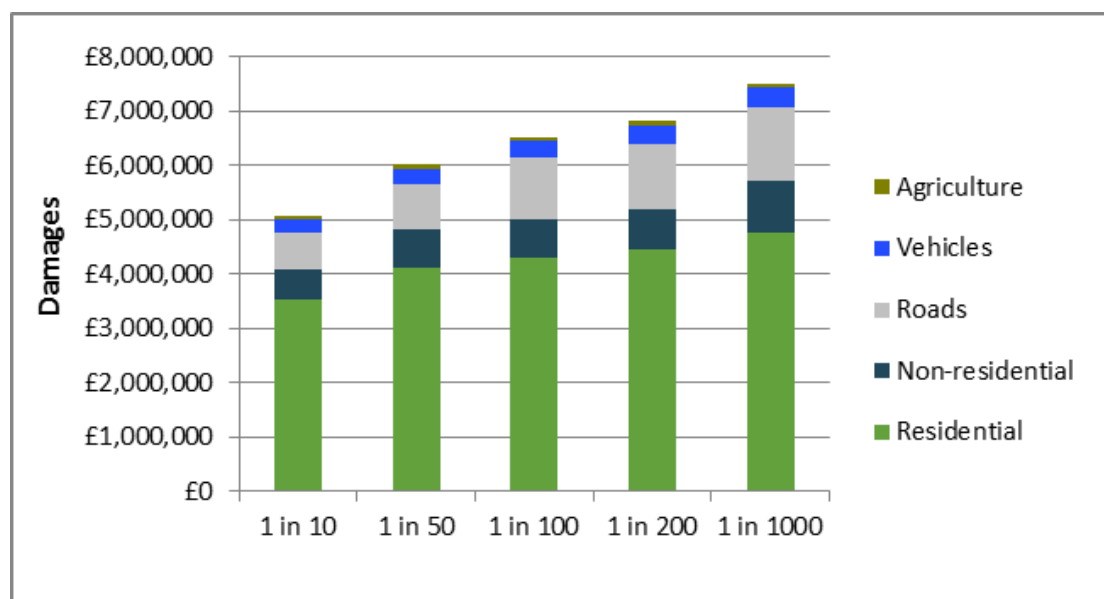


Figure 2: Damages by flood likelihood

¹ Some receptors are counted more than once if flooded from multiple sources

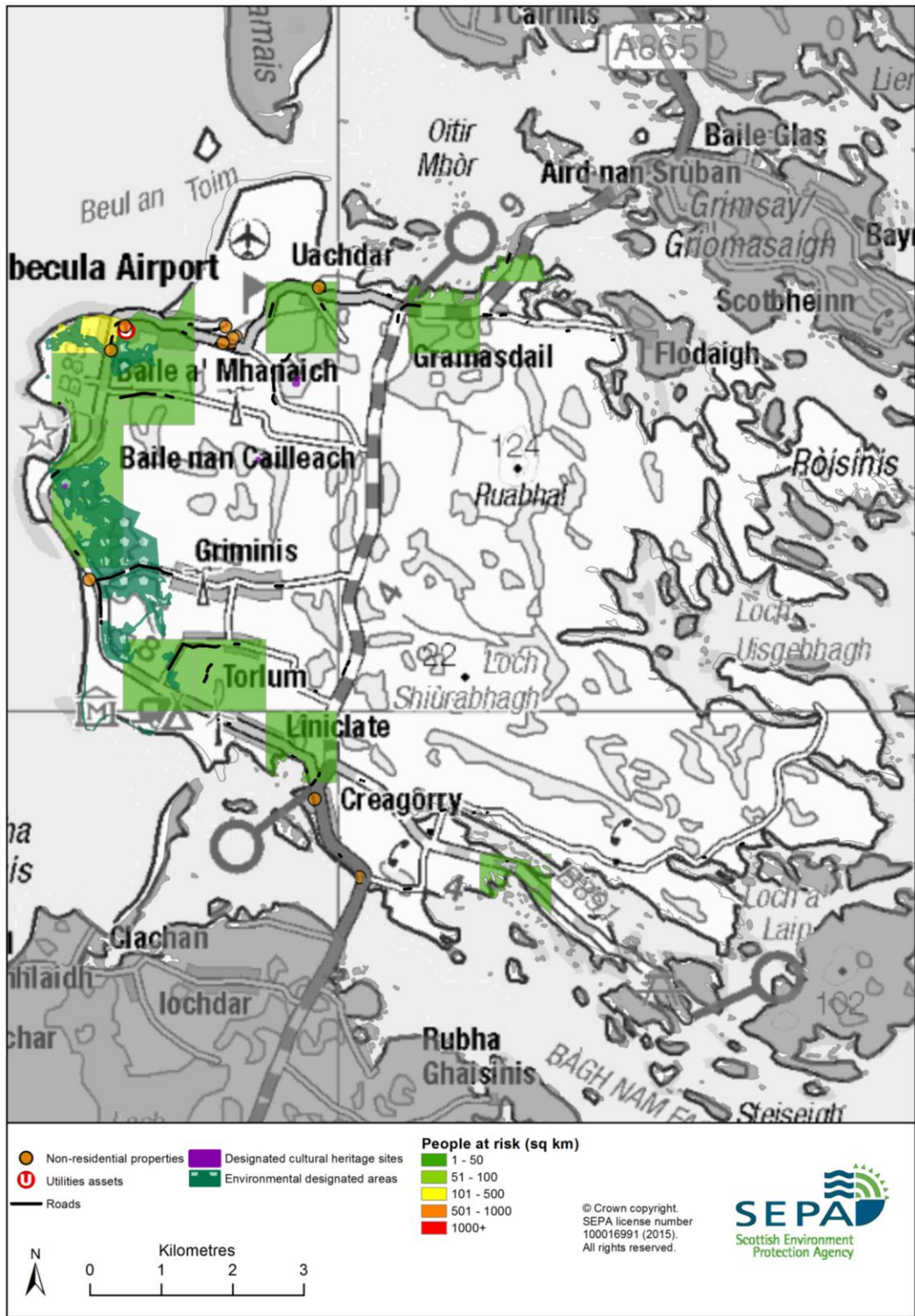


Figure 3: Impacts of flooding

History of flooding

In January 2005 a severe storm hit the west coast of Scotland including the Outer Hebrides. Widespread flooding occurred in many locations in Benbecula, particularly on the west coast, with roads, agricultural land, houses and non-residential properties being inundated with sea water. Roads were closed at Balivanich, Nunton, Pol na Cran, Lionacleit and Gramsdale. The South Ford Hydrodynamics Study provides a detailed account of this flood in Benbecula and South Uist.

Although there are no other officially recorded floods in this Potentially Vulnerable Area, coastal flooding has occurred on numerous occasions when storm surge and high tides coincide. An added risk factor is that when coastal flooding occurs it is usually accompanied by high strength winds, which can create waves and cause additional damage.

The A865 road is known to flood at Gramsdale as are the B892 at Pol na Cran and the B892 at Balivanich where waves cause the carriageway to be blocked by debris.

Objectives to manage flooding in Potentially Vulnerable Area 02/06

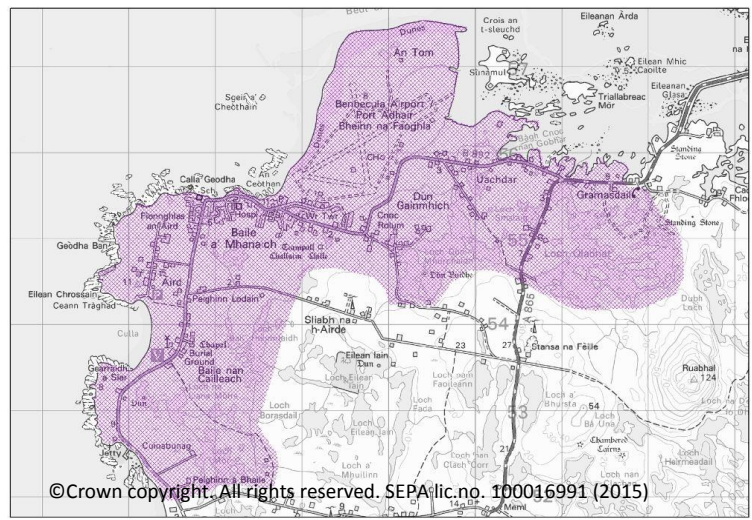
Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target 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 Benbecula Potentially Vulnerable Area.

Reduce risk in the Balivanich area from river and coastal flooding

Indicators:

Target area:

- 220 people
- £350,000 Annual Average Damages from residential properties
- £57,000 Annual Average Damages from non-residential properties



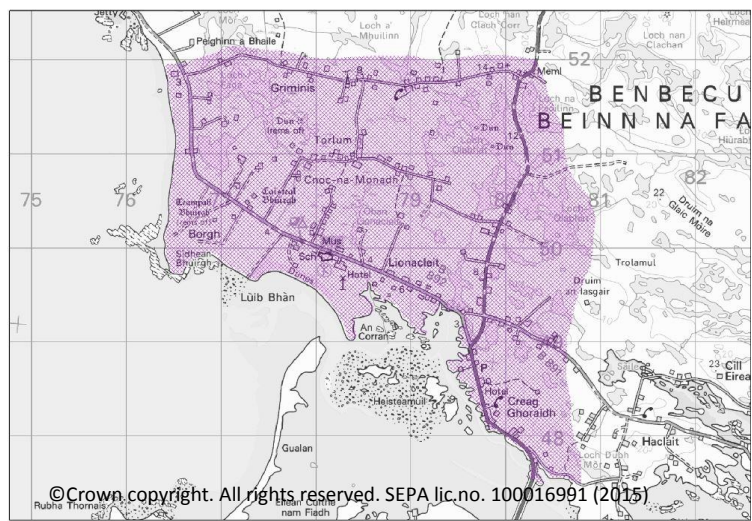
Objective ID: 200601

Reduce risk to south-west Benbecula from river and coastal flooding

Indicators:

Target area:

- 10 people
- £24,000 Annual Average Damages from residential properties



Objective ID: 200602

Target area	Objective	ID	Indicators within PVA
Benbecula airport	Reduce flood risk to Benbecula airport	200604	<ul style="list-style-type: none"> • Benbecula airport
Applies across Outer Hebrides Local Plan District	Avoid an overall increase in flood risk	200001	<ul style="list-style-type: none"> • 110 residential properties • £560,000 Annual Average Damages
Applies across Outer Hebrides Local Plan District	Reduce overall flood risk	200002	<ul style="list-style-type: none"> • 110 residential properties • £560,000 Annual Average Damages
Applies across Outer Hebrides 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.		

Actions to manage flooding in Potentially Vulnerable Area 02/06

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 Benbecula Potentially Vulnerable Area.

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

Action (ID):	FLOOD PROTECTION SCHEME/WORKS (2007010006)				
Objective (ID):	Reduce risk to south-west Benbecula from river and coastal flooding (200602)				
Delivery lead:	Comhairle nan Eilean Siar				
Priority:	National:		Within local authority:		
	14 of 42		1 of 1		
Status:	Under development	Indicative delivery:	2016-2021		
Description:	Detailed design for a flood protection scheme for the South Ford area is progressing. The South Ford Scheme aims to reduce flood risk on South Uist as well as the southern coast of Benbecula. The scheme will likely include the construction of embankments, beach recharge at Gualan Island, sand dune/machair restoration and may also include property level protection for any residual risk. The flood protection scheme would be constructed to a standard of 1 in 100 years (locally 1 in 200 years) and will include an allowance for climate change. An option to relieve flooding by creating larger openings in the South Ford causeway is also being considered by the local authority with the encouragement of local community groups. The viability and funding for this option is being investigated outwith the flood risk management process.				
Potential impacts					
Economic:	The scheme would reduce risk to an estimated 58 properties and would achieve an estimated £7.8 million damages avoided. The benefit-cost ratio of the proposed works is 3.97.				
Social:	The flood protection scheme would have a positive benefit to the health and wellbeing of the community and to socially vulnerable people. A scheme could also reduce the significant flood impacts on				

Social:	a rural community including key local facilities and transport links. The last major storm in 2005 led to five fatalities as a family attempted to escape the floods. Climate change is likely to have a significant impact in this area and the scheme should be designed to help reduce long term impacts of sea level rise.
Environmental:	Flood protection works can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. There is potential for both positive impacts such as restoring coastal habitats at Gualan Island, as well as negative impacts such as impacting on coastal habitats and landscapes at Lionacleit. There are potential adverse effects on biodiversity , active coastal processes, and even coastal flood risk if sediment extraction allows greater wave attack. To be in accord with the FRM Strategy, the responsible authority (and where applicable, the licensing authority) should seek to ensure that the works will not have an adverse effect on the integrity of the South Uist Machair and Lochs Special Protection Area and South Uist Machair Special Area of Conservation. Opportunities to mitigate any environmental impacts should be identified as part of the on-going studies through the design and timing of works.

Action (ID):	FLOOD PROTECTION SCHEME/WORKS (2006040021)		
Objective (ID):	Reduce flood risk to Benbecula airport (200604)		
Delivery lead:	Highlands and Islands Airport Limited		
Status:	Under development	Indicative delivery:	2016-2027
Description:	Coast protection works that protect the airport from erosion and that reduce flood risk will be extended subject to approvals. Phase 3 of the works is planned for completion in 2016/2021 and Phase 4 works in 2022/2027.		

Action (ID):	NEW FLOOD WARNING (2000020010)		
Objective (ID):	Reduce overall flood risk (200002)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	The area under consideration covers the coastline of the Outer Hebrides. A flood forecasting system will be required before flood warnings can be implemented for this area.		

Action (ID):	FLOOD PROTECTION STUDY (2006010005)		
Objective (ID):	Reduce risk in the Balivanich area from river and coastal flooding (200601)		
Delivery lead:	Comhairle nan Eilean Siar		

Priority:	National:		Within local authority:	
	34 of 168		1 of 5	
Status:	Not started	Indicative delivery:	2016-2021	
Description:	A study is needed to confirm the business case and determine the extent and size of defences required. The study should be focused on Balivanich, but should also confirm the feasibility of defences in the Uachdar area. The study should include direct defences, channel modifications, improvements to the floodgate on the Uachdar drainage system (coastal management action) and consideration of property level protection for any residual flood risk. Other actions may also be considered to develop the most sustainable range of options.			
Potential impacts				
Economic:	The study could benefit 97 residential and four non-residential properties at risk of flooding in this location, with potential damages avoided of up to £15 million.			
Social:	Approximately 216 people could directly benefit from flood protection works. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Potentially there may also be reduced flood risk to an energy production/electricity utility site and roads (including B892), reducing disruption to the wider community. There is potential that the community may become disconnected from the watercourses and sea through reduced access. Negative impacts through disturbance to the local community during the construction phase should be considered.			
Environmental:	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 impacts on coastal landscapes and habitats, and inland lochs. To be in accord with the FRM Strategy, the responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the Aird and Borve - Benbecula Special Protection Area. Due to the location of any future flood protection works it is unlikely that the scheduled monuments would be affected or benefit.			

Action (ID):	STRATEGIC MAPPING AND MODELLING (2000020016)			
Objective (ID):	Reduce overall flood risk (200002)			
Delivery lead:	SEPA			
Status:	Not started	Indicative delivery:	2016-2021	
Description:	SEPA will be seeking to develop the flood hazard mapping in the South Uist to North Uist area to improve understanding of the coastal flood risk. The extent and timing of the completed improvements will be dependent on detailed scoping and data availability.			

Action (ID):	FLOOD FORECASTING (2000020009)		
Objective (ID):	Reduce overall flood risk (200002)		
Delivery lead:	SEPA		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<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 'Western Isles' flood alert area.</p>		

Action (ID):	COMMUNITY FLOOD ACTION GROUPS (2000020012)		
Objective (ID):	Reduce overall flood risk (200002)		
Delivery lead:	Community		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>The lochdar Flood Action Group and the Middle District Flood Action Group were formed in the immediate aftermath of the January 2005 storm. Public workshops and meetings have been held to discuss coastal erosion and flooding issues.</p>		

Action (ID):	SELF HELP (2000020011)		
Objective (ID):	Reduce overall flood risk (200002)		
Delivery lead:	—		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<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>		

Action (ID):	AWARENESS RAISING (2000020013)		
Objective (ID):	Reduce overall flood risk (200002)		
Delivery lead:	Responsible authorities		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<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>		

Action (ID):	MAINTENANCE (2000020007)		
Objective (ID):	Reduce overall flood risk (200002)		
Delivery lead:	Comhairle nan Eilean Siar, asset / land managers		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p> <p>The Benbecula Main Drain provides drainage to low-lying land in the west of Benbecula and has outfalls controlled by floodgates in Balivanich to the north and Lionacleit to the southwest. Another drainage canal, also controlled by a floodgate, flows from south and east of the airport to Uachdar in the north of the island. Maintenance of both of these drainage systems is important and responsibility for this is shared between Stòras Uibhist, Scottish Government Rural Inspectorates and Payments Division, Scottish Water and local crofters.</p>		

Action (ID):	EMERGENCY PLANS/RESPONSE (2000020014)		
Objective (ID):	Reduce overall flood risk (200002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p>		

Action (ID):	PLANNING POLICIES (2000010001)		
Objective (ID):	Avoid an overall increase in flood risk (200001) Reduce overall flood risk (200002)		
Delivery lead:	Planning authority		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p>		