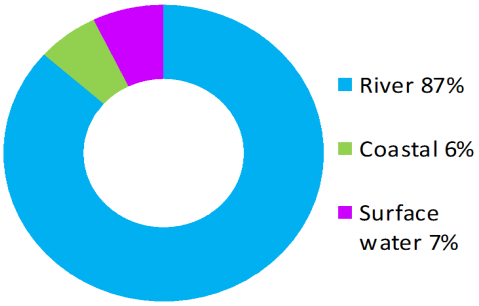
Girvan (Potentially Vulnerable Area 12/18)

Local Plan District	Local authority	Main catchment
Ayrshire	South Ayrshire Council	Girvan to Lendalfoot coastal

Summary of flooding impacts



At risk of flooding

- 110 residential properties
- 30 non-residential properties
- £220,000 Annual Average Damages

(damages by flood source shown left)

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.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

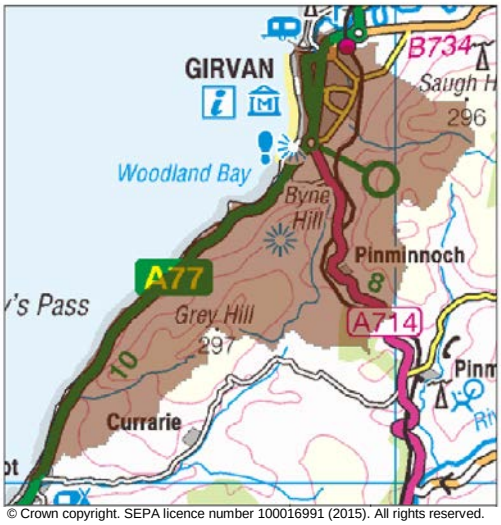
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	Maintain flood warning	Awareness raising	*Surface water plan/study*	Emergency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

Girvan (Potentially Vulnerable Area 12/18)

Local Plan District	Local authority	Main catchment
Ayrshire	South Ayrshire Council	Girvan to Lendalfoot coastal

Background

This Potentially Vulnerable Area is located in the south of the Ayrshire Local Plan District on the west coast between Girvan and Lendalfoot (shown below). It incorporates the towns of Girvan and Pinminnoch and is approximately 20km^2.



There are approximately 110 residential properties and 30 non-residential properties at risk of flooding. The Annual Average Damages are approximately £220,000.

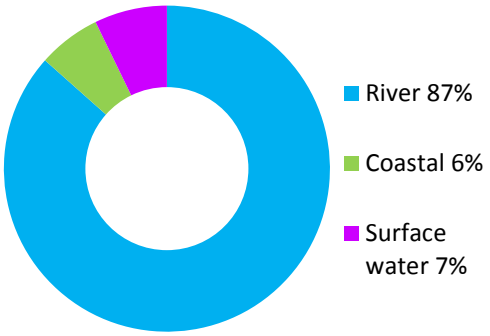


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding within this area is primarily attributed to the Mill Burn which flows in a north westerly direction through Girvan before joining the Water of Girvan immediately downstream of the A77. This is expected to impact a number of residential and non-residential properties, along with sections of the road and rail network (notably the A77). The Water of Girvan is outwith the Potentially Vulnerable Area boundary to the north but as the larger watercourse, it is likely to contribute to flooding on the lower reaches of the Mill Burn. The Mill Burn primarily flows as an open channel through a largely residential area with culverts beneath a number of roads in the area. The Myoch Burn, which flows in a westerly direction approximately 500m to the south of Girvan, is another source of river flooding which predominately affects agricultural land but also presents a risk to a caravan park.

The only urban areas at risk of surface water flooding are in the vicinity of the Mill Burn in Girvan.

There is limited risk from coastal flooding which is concentrated around the mouth of the Water of Girvan. At this location a number of residential and non-residential properties and sections of road are predicted to experience flooding.

Interaction between the various flooding sources is likely to occur on the lower reaches of watercourses as they enter the sea. High river flows in the Mill Burn and tidal surges have the potential to produce the highest impacts. Other watercourses which are likely to produce a combined effect of river and coastal flooding are the Water of Girvan and Myoch Burn. The Doune Burn and Mill Burn catchment have been studied by South Ayrshire Council to understand the flooding from these watercourses and the tidal effects of the Water of Girvan.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 110 to 130 and the number of non-residential properties from 30 to 40.

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. The damages associated with floods of different likelihood are shown in Figure 2. Residential properties affected by river flooding experience the highest economic impact at approximately 80% of the damages.

The location of the impacts of flooding is shown in Figure 3. Most of the impacts are within Girvan with flooding to people, non-residential properties, utilities and roads.

History of flooding

Most local flood records relate to Girvan. On Friday 3 January 2014 Girvan was hit by a series of floods. Flood warnings were issued by the SEPA for the esplanade at Girvan. The high tide and waves affected the harbour and Golf Course Road in the town was closed for a limited period. Another relatively recent coastal flood occurred in December 1991, causing major flooding of the esplanade at Girvan. Other coastal events have occurred in 1894, 1892 and 1913 which were reported to damage roads and properties along the seafront. The Water of Girvan is known to have burst its banks in October 1998 and 2000 with minor impact on the area.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 3,200)	50	110	130
Non-residential properties (total 330)	<10	30	40
People	100	250	290
Community facilities	0	0	0
Utilities assets	0	<10	<10
Transport links - roads (km)	0.1 of A road	0.5 (of which 0.3 is A road)	0.7 (of which 0.4 is A road)
Transport links - rail (km)	0.3	0.1	0.5
Environmental designated areas (km^2)	0.2	0.2	0.2
Designated cultural heritage sites	0	0	0
Agricultural land (km^2)	0.1	0.1	0.1

Table 1: Summary of flooding impacts[1]

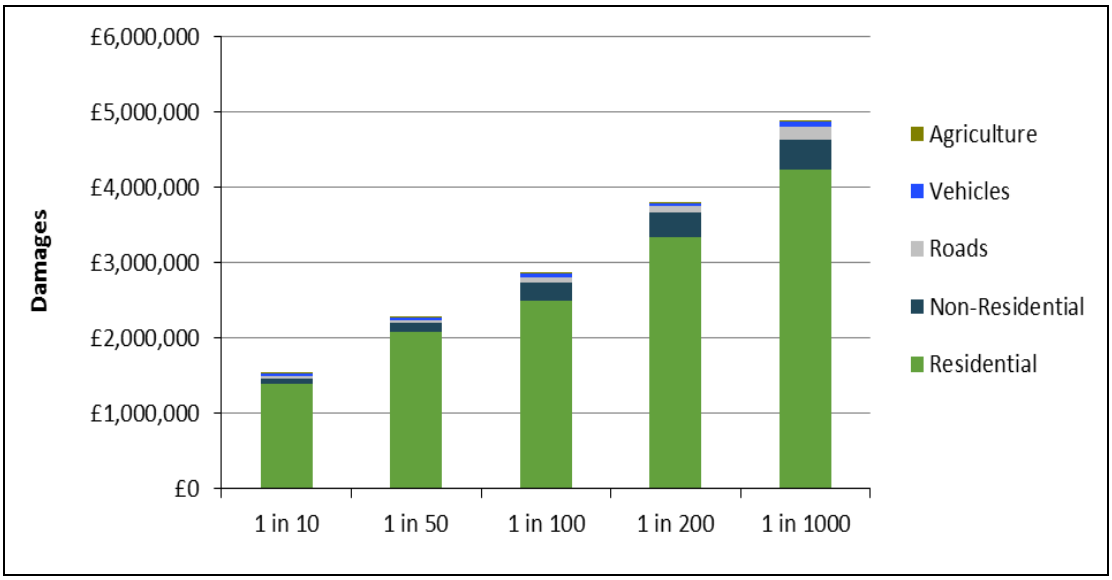


Figure 2: Damages by flood likelihood

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

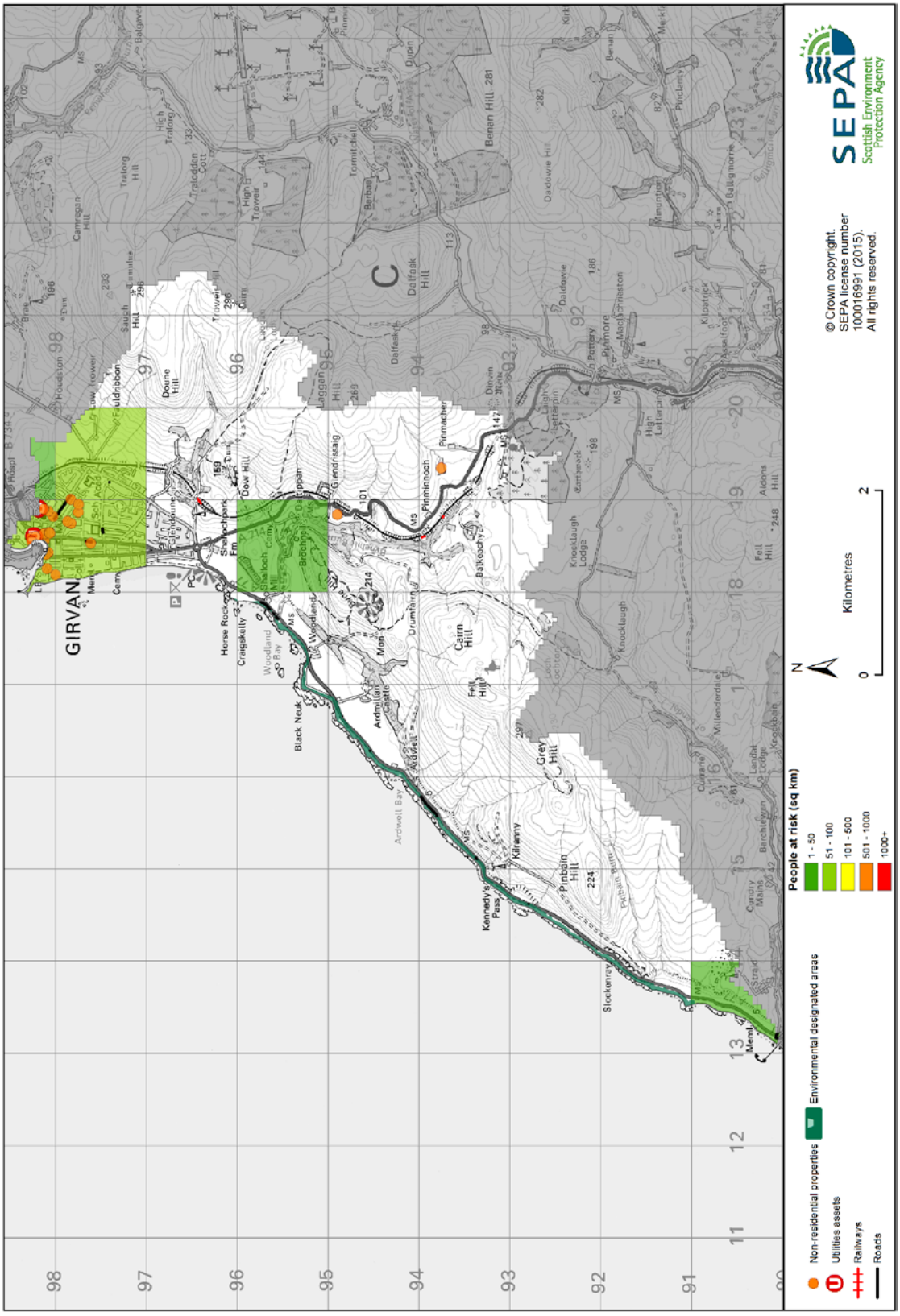


Figure 3: Impacts of flooding

Objectives to manage flooding in Potentially Vulnerable Area 12/18

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 Girvan Potentially Vulnerable Area.

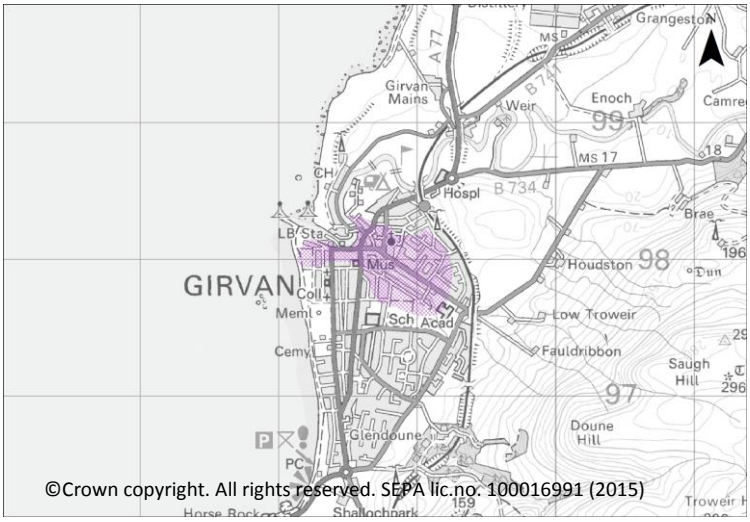
Reduce the risk of river and coastal flooding to residential properties and non-residential properties in Girvan

Indicators:

- 100 residential properties
- 30 non-residential properties
- £180,000 Annual Average Damages

Objective ID: 12032

Target area:



Target area	Objective	ID	Indicators within PVA
Applies across Ayrshire Local Plan District	Avoid an overall increase in flood risk	12039	• 110 residential properties • £220,000 Annual Average Damages
Applies across Ayrshire Local Plan District	Reduce overall flood risk	12082	• 110 residential properties • £220,000 Annual Average Damages
Applies across Ayrshire 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 12/18

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 Girvan Potentially Vulnerable Area.

Selected actions					
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
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

Action (ID):	**FLOOD PROTECTION STUDY** (121030005)		
Objective (ID):	Reduce the risk of river and coastal flooding to residential properties and non-residential properties in Girvan (12032)		
Delivery lead:	North Ayrshire Council and South Ayrshire Council		
Priority:	National:	Within local authority:	
	8 of 168	**1 of 5**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A shoreline management plan is recommended, this study is not limited to Potentially Vulnerable Areas but should cover the whole of the Ayrshire coastline and any areas beyond this which may be influenced by changes in coastal processes. The study should investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.		
Potential impacts			
Economic:	The study should consider how to reduce flood risk along the Ayrshire coastline. For the entire study area potential damages avoided are estimated to be up to £26 million.		
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment.		

Action (ID):	**FLOOD PROTECTION STUDY** (120320005)		
Objective (ID):	Reduce the risk of river and coastal flooding to residential properties and non-residential properties in Girvan (12032)		
Delivery lead:	South Ayrshire Council		
Priority:	National:	Within local authority:	
	75 of 168	**1 of 3**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	The shoreline management plan for the Ayrshire coastline will help to provide a broad view of coastal issues and ensure potential mitigation actions will not create further issues elsewhere. A study is recommended to further investigate river flood risk combined with coastal flood risk to Girvan. This study should build on the work within the shoreline management plan to provide a detailed investigation of the current and future risk. The study should examine the most sustainable combination of actions to manage flooding.		
Potential impacts			
Economic:	The flood protection study should consider how to reduce flood risk to 99 residential properties and 15 non-residential properties in this location, with potential damages avoided of up to £4.7 million. The economic impact of natural flood management actions is difficult to define. However, these actions can reduce flood risk for high likelihood events. In this location, it has been estimated that 42 residential and non-residential properties could potentially benefit from natural flood management actions.		
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. In addition there are two utilities which have been identified as potentially benefitting from this action. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism. There may be negative impacts through disturbance to the local community during the construction phase.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. This study is proposed for the Girvan Estuary (water body ID 200014). The physical condition of this estuary is identified by river basin management planning to be at less than good status. Future works could improve the condition of the estuary or degrade it. Opportunities to improve the condition of the estuary should be considered by coordinating with river basin management planning. There are no international, national or local level environmental designations that are likely to be impacted by this action. There is likely to be a loss of semi-natural habitats in the footprint of the storage. Downstream of the new structures there may be slight negative impacts on water quality through increased erosion and sedimentation on the Mill Burn. Introduction of a control structure may cause a build up of sediment in the Mill Burn, and potentially increased localised erosion on the Girvan Estuary. There is the potential for introduction of wetland habitats to the storage area, which would provide increased biodiversity to this suburban parkland		

Environmental:	area. There is likely to be a the loss of habitat and displacement of species in the short term during culvert modification works; however, these are likely to re-establish and return in the medium to long term. There is the potential for short term water quality impacts on the Girvan Estuary during works. There is the potential for impediment to fish passage from the introduction of a control structure. There is the potential for impacts on the local townscape in the area of Victory Park.

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (120820016)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	SEPA		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	SEPA will seek to develop flood mapping in the Ayr to Ardrossan area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (120820019)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (120320017)		
Objective (ID):	Reduce the risk of river and coastal flooding to residential properties and non-residential properties in Girvan (12032)		
Delivery lead:	South Ayrshire Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	There are a number of sections of coastal defences in Girvan which provide some protection to the area. These defences will be maintained, and will continue to manage flooding according to the design standard at the time of construction. Levels of flood risk are likely to increase over time as a consequence of climate change.		

Action (ID):	**MAINTAIN FLOOD WARNING** (120820030)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the Girvan Esplanade flood warning area which is part of the Firth of Clyde coastal flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (120820009)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**SELF HELP** (120820011)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**AWARENESS RAISING** (120820013)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (120820007)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	South Ayrshire Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**EMERGENCY PLANS/RESPONSE** (120820014)		
Objective (ID):	Reduce overall flood risk (12082)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**PLANNING POLICIES** (120390001)		
Objective (ID):	Avoid an overall increase in flood risk (12039) Reduce overall flood risk (12082)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		