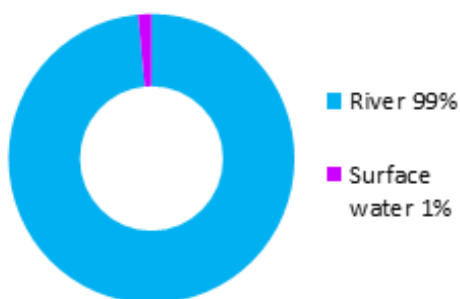


Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council, Perth and Kinross Council	River Eden

Summary of flooding impacts



At risk of flooding

- 170 residential properties
- 30 non-residential properties
- £610,000 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>	New flood warning	Community flood action groups	<i>Property level protection scheme</i>	<i>Site protection plans</i>
Flood protection study	Natural flood management study	<i>Maintain flood warning</i>	Awareness raising	<i>Surface water plan/study</i>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

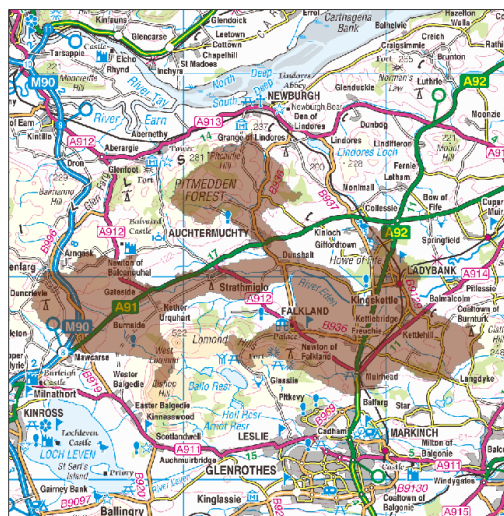
Actions

Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council, Perth and Kinross Council	River Eden

Background

This Potentially Vulnerable Area is 101km² (shown below). It is situated in the upper reaches of the River Eden catchment and includes Auchtermuchty.



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This Potentially Vulnerable Area has a risk of river and surface water flooding with the majority of damages caused by river flooding.

There are approximately 170 residential properties and 30 non-residential properties at risk of flooding. The Annual Average Damages are approximately £610,000.

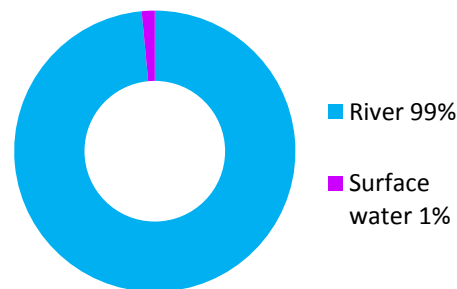


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The highest risk of flooding is in Auchtermuchty from the Auchtermuchty Burn. The risk of flooding is dispersed across this area and may also impact Strathmiglo, Kettlebridge and Falkland.

The risk of flooding to people, 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. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties.

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

The figures presented for Annual Average Damages include damages to residential properties, non-residential properties, transport and agriculture.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 4,200)	110	170	170
Non-residential properties (total 560)	20	30	30
People	240	360	360
Community facilities	0	0	0
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	1 M road (M90), 4 A roads, 4 B roads at 50 locations 2 Railway routes at 16 locations: Perth to Ladybank Dundee to Ladybank	1 M road (M90), 4 A roads, 4 B roads at 55 locations 2 Railway routes at 16 locations: Perth to Ladybank Dundee to Ladybank	1 M road (M90), 4 A roads, 4 B roads at 56 locations 2 Railway routes at 17 locations: Perth to Ladybank Dundee to Ladybank
Environmental designated areas (km ²)	0	0	0
Designated cultural heritage sites	10	11	11
Agricultural land (km ²)	5.6	7.0	7.6

Table 1: Summary of flooding impacts

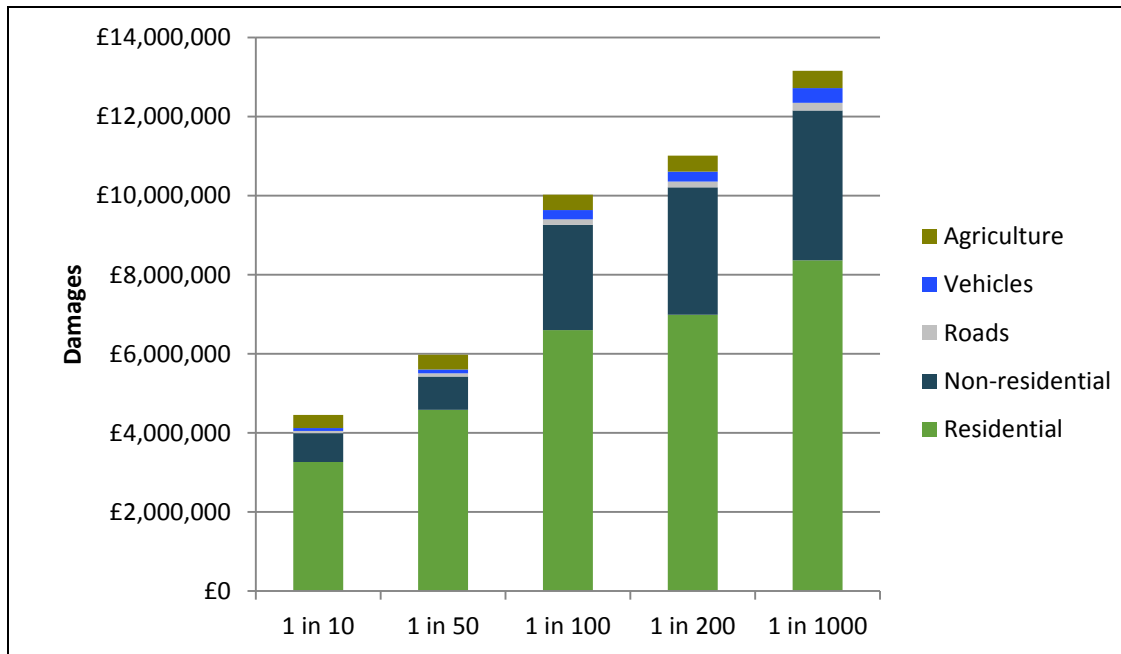


Figure 2: Damages by flood likelihood

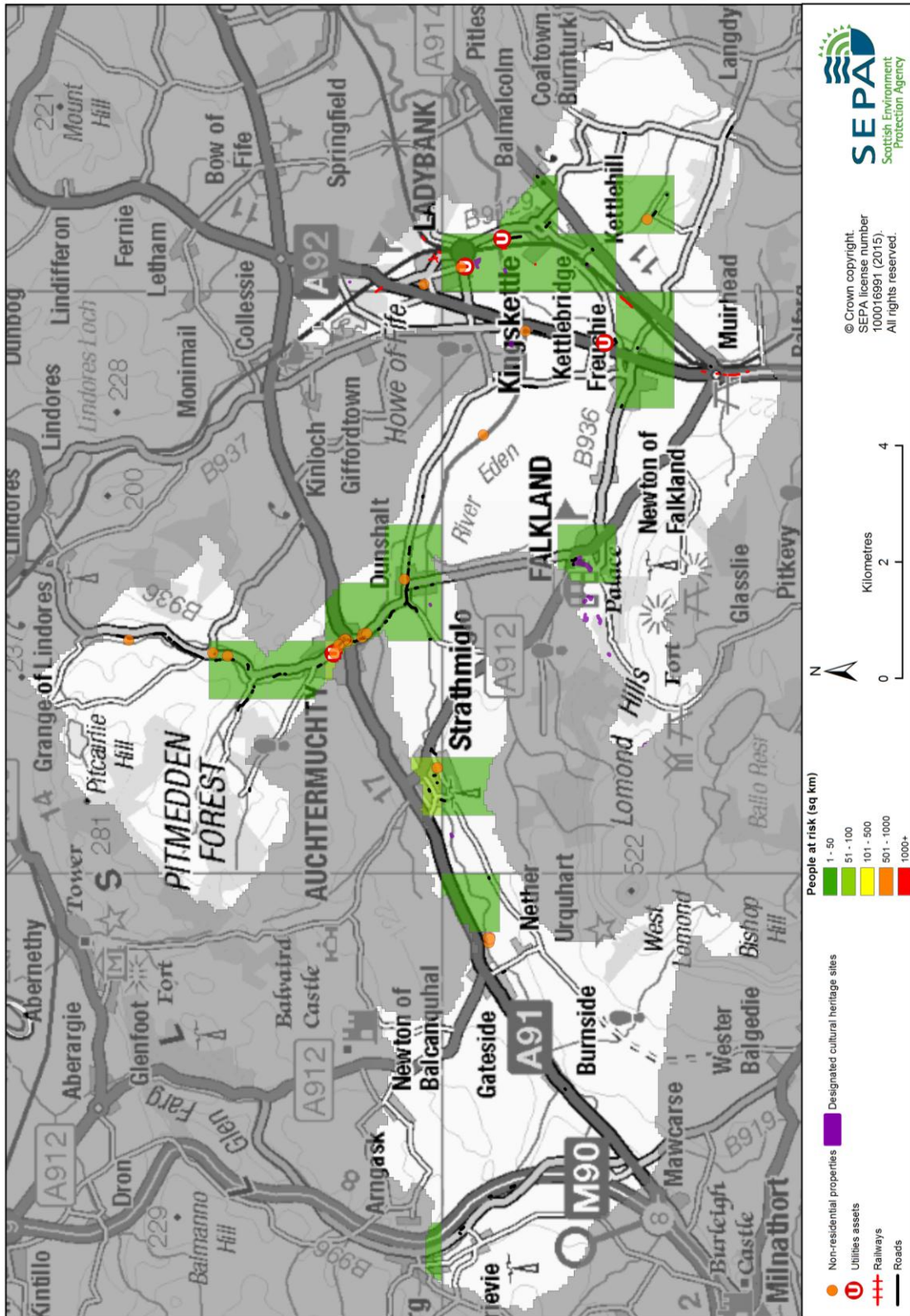


Figure 3: Impacts of flooding

History of flooding

The following flood events have been recorded in this area:

- July 2011: A small number of properties flooded in Falkland after overnight rainfall.
- 3 August 2008: Homes and cars were affected by water up to 1m deep after a culvert became blocked on the Pitillock Burn at Freuchie Mill. Freuchie village was also affected.

Objectives to manage flooding in Potentially Vulnerable Area 07/19

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 Auchtermuchty and Pleasance Potentially Vulnerable Area.

Reduce economic damages to residential and non-residential properties in Auchtermuchty caused by flooding from the Auchtermuchty Burn

Indicators:

- £140,000 Annual Average Damages from residential properties
- £13,000 Annual Average Damages from non-residential properties

Target area:



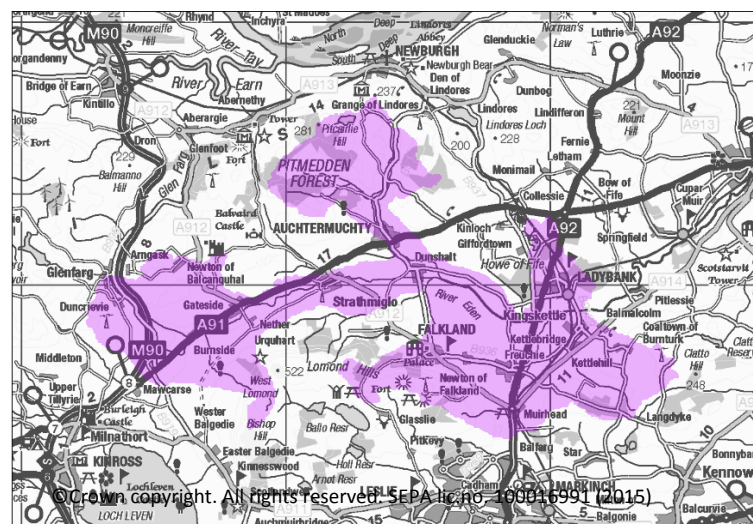
Objective ID: 7052

Reduce economic damages to residential and non-residential properties in the Auchtermuchty and Pleasance Potentially Vulnerable Area caused by river flooding

Indicators:

- £260,000 Annual Average Damages from residential properties
- £89,000 Annual Average Damages from non-residential properties

Target area:



Objective ID: 7053

Target area	Objective	ID	Indicators within PVA
Applies across Tay Estuary and Montrose Basin Local Plan District	Avoid an overall increase in flood risk	7001	<ul style="list-style-type: none"> • 170 residential properties • £610,000 Annual Average Damages
Applies across Tay Estuary and Montrose Basin Local Plan District	Reduce overall flood risk	7054	<ul style="list-style-type: none"> • 170 residential properties • £610,000 Annual Average Damages
Applies across Tay Estuary and Montrose Basin 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 07/19

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 Auchtermuchty and Pleasance Potentially Vulnerable Area.

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

Action (ID):	NEW FLOOD WARNING (70540010)		
Objective (ID):	Reduce overall flood risk (7054)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	The area under consideration includes properties affected by flooding in Fife and Perth and Kinross and is likely to include Auchtermuchty. Further feasibility assessment will be required to assess delivery potential and the final detail of communities for which warnings can be provided will be determined during the scoping process.		

Action (ID):	FLOOD PROTECTION STUDY (70520005)		
Objective (ID):	Reduce economic damages to residential and non-residential properties in Auchtermuchty caused by flooding from the Auchtermuchty Burn (7052)		
Delivery lead:	Fife Council		
Priority:	National: 72 of 168	Within local authority:	10 of 16
Status:	Not started	Indicative delivery:	2016-2021
Description:	A flood protection study has been recommended for Auchtermuchty to assess whether flood storage and natural flood management could further reduce flood risk. The study should supplement previous studies carried out by Fife Council and consider the existing flood protection works. Natural flood management options that should be		

	considered include river / floodplain restoration and sediment management. The study should also investigate property relocation and the viability of property level protection. The study should take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream.
Potential impacts	
Economic:	The study could benefit 44 residential properties and 13 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £4.7 million. Sixty of these residential and non-residential properties are at risk from high likelihood flooding and may benefit from natural flood management actions.
Social:	Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment and designated sites. Where possible, opportunities to enhance and restore the environment should be sought, for example through natural flood management. The Glassart Burn (water body ID 6212) is located within the study area and the physical condition of this river has been identified by SEPA to be at less than good status. Opportunities to improve the condition of the river should be considered by coordinating with river basin management planning. Conservation areas and listed buildings are also present in the study area and could be positively or negatively impacted.

Action (ID):	NATURAL FLOOD MANAGEMENT STUDY (70530003)		
Objective (ID):	Reduce economic damages to residential and non-residential properties in the Auchtermuchty and Pleasance Potentially Vulnerable Area caused by river flooding (7053)		
Delivery lead:	Fife Council		
Status:	Not started	Indicative delivery:	2016-2021
Description:	A natural flood management study has been recommended for Dunshalt, Freuchie Mill and Kingskettle to assess whether river / floodplain restoration and sediment management could help reduce flood risk. The study should take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream.		
Potential impacts			
Economic:	The economic impact of natural flood management actions is difficult to define. However, these actions can reduce flood risk for high likelihood events. Sixty residential and non-residential properties could potentially benefit from natural flood management actions in this location.		
Social:	Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. Natural flood management actions can restore and enhance natural environments		

Social:	and create opportunities for recreation and tourism.
Environmental:	Natural flood management actions can have a positive impact on the ecological quality of the environment by restoring and enhancing natural habitats. A natural flood management study is proposed in an area where the physical condition of a number of rivers is identified by SEPA to be at less than good status. These include: parts of the River Eden, Fernie Burn, Kettle Burn, Laprig Burn, Glassart Burn and Ballingall Burn (water body IDs 6200, 6206, 6209, 6211, 6212 and 6213). Opportunities to improve the condition of these rivers should be considered by coordinating with river basin management planning. In addition, listed buildings are present in the study area and could be positively or negatively impacted.

Action (ID):	STRATEGIC MAPPING AND MODELLING (70540016)		
Objective (ID):	Reduce overall flood risk (7054)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km ² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans and Scottish Water integrated catchment studies will be considered as these projects are completed.		

Action (ID):	STRATEGIC MAPPING AND MODELLING (70540019)		
Objective (ID):	Reduce overall flood risk (7054)		
Delivery lead:	Scottish Water		
Status:	Not started	Indicative delivery:	2016-2021
Description:	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.		

Action (ID):	MAINTAIN FLOOD PROTECTION SCHEME (70520017)		
Objective (ID):	Reduce economic damages to residential and non-residential properties in Auchtermuchty caused by flooding from the Auchtermuchty Burn (7052)		
Delivery lead:	Fife Council		
Status:	Existing	Indicative delivery:	Ongoing
Description:	Continue to maintain the existing Auchtermuchty Flood Protection Scheme. The scheme consists mainly of flood walls and a low earth embankment. The scheme has a design standard of protection of 1 in 50 years.		

Action (ID):	MAINTAIN FLOOD PROTECTION SCHEME (70530017)		
Objective (ID):	Reduce economic damages to residential and non-residential properties in the Auchtermuchty and Pleasance Potentially Vulnerable Area caused by river flooding (7053)		
Delivery lead:	Fife Council		
Status:	Existing	Indicative delivery:	Ongoing
Description:	Continue to maintain the existing Dunshalt Village Flood Protection Scheme.		

Action (ID):	FLOOD FORECASTING (70540009)		
Objective (ID):	Reduce overall flood risk (7054)		
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):	COMMUNITY FLOOD ACTION GROUPS (70530012)		
Objective (ID):	Reduce economic damages to residential and non-residential properties in the Auchtermuchty and Pleasance Potentially Vulnerable Area caused by river flooding (7053)		
Delivery lead:	Community		
Status:	Existing	Indicative delivery:	Ongoing
Description:	Falkland Flood Action Group, Freuchie Flood Action Group and the Kettle and District Flood Resilience Group operate in this area and aim to increase community resilience to flooding. Glenfarg Community Council also operates in this area and have prepared a community resilience plan to help prepare for and respond to emergencies.		

Action (ID):	SELF HELP (70540011)		
Objective (ID):	Reduce overall flood risk (7054)		
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 (70540013)		
Objective (ID):	Reduce overall flood risk (7054)		
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 undertake flood risk education and awareness raising activities. In addition, SEPA will engage with Fife Council 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 (70540007)		
Objective (ID):	Reduce overall flood risk (7054)		
Delivery lead:	Fife Council and Perth and Kinross 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 (70540014)		
Objective (ID):	Reduce overall flood risk (7054)		
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. Fife Council operates an emergency flood plan. Fife Council also provides flood sacks for use in emergencies and has installed flood pods containing flood protection products for use in emergencies in flood risk areas.		

Action (ID):	PLANNING POLICIES (70010001)		
Objective (ID):	Avoid an overall increase in flood risk (7001)		
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>		