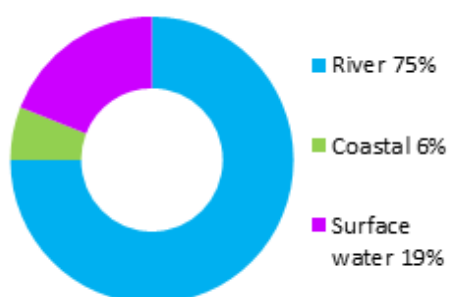


## Leven (Potentially Vulnerable Area 10/03)

Local Plan District	Local authority	Main catchment
Forth Estuary	Fife Council	River Leven (Fife)

### Summary of flooding impacts



#### At risk of flooding

- 180 residential properties
- 90 non-residential properties
- £820,000 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>	<b>New flood warning</b>	<i>Community flood action groups</i>	<i>Property level protection scheme</i>	<i>Site protection plans</i>
<b>Flood protection study</b>	<i>Natural flood management study</i>	<b>Maintain flood warning</b>	<b>Awareness raising</b>	<b>Surface water plan/study</b>	<b>Emergency plans/response</b>
<i>Maintain flood protection scheme</i>	<b>Strategic mapping and modelling</b>	<b>Flood forecasting</b>	<b>Self help</b>	<b>Maintenance</b>	<b>Planning policies</b>

Actions

## Leven (Potentially Vulnerable Area 10/03)

Local Plan District	Local authority	Main catchment
Forth Estuary	Fife Council	River Leven (Fife)

### Background

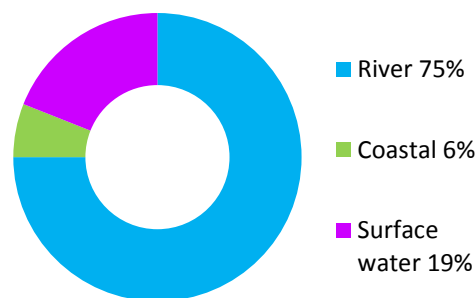
This Potentially Vulnerable Area is 22km<sup>2</sup> and part of the Firth of Forth catchment (shown below). This is a small coastal area containing the towns of Leven and Methil and villages of Kennoway and Lower Largo. The main watercourse is the River Leven. There is one other notable watercourse, the Sconie Burn, which is situated to the north of Leven.



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The area has a risk of river, surface water and coastal flooding. The majority of damages in this Potentially Vulnerable Area are caused by river flooding.

There are approximately 180 residential properties and 90 non-residential properties at risk of flooding. The Annual Average Damages are approximately £820,000.



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

### Summary of flooding impacts

The highest risks of river flooding are from the River Leven and the Sconie Burn to Methil and Leven. The highest risk of surface water flooding is in Leven.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, protected 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 non-residential properties followed by damages to residential properties. The location of the impacts of flooding is shown in Figure 3.

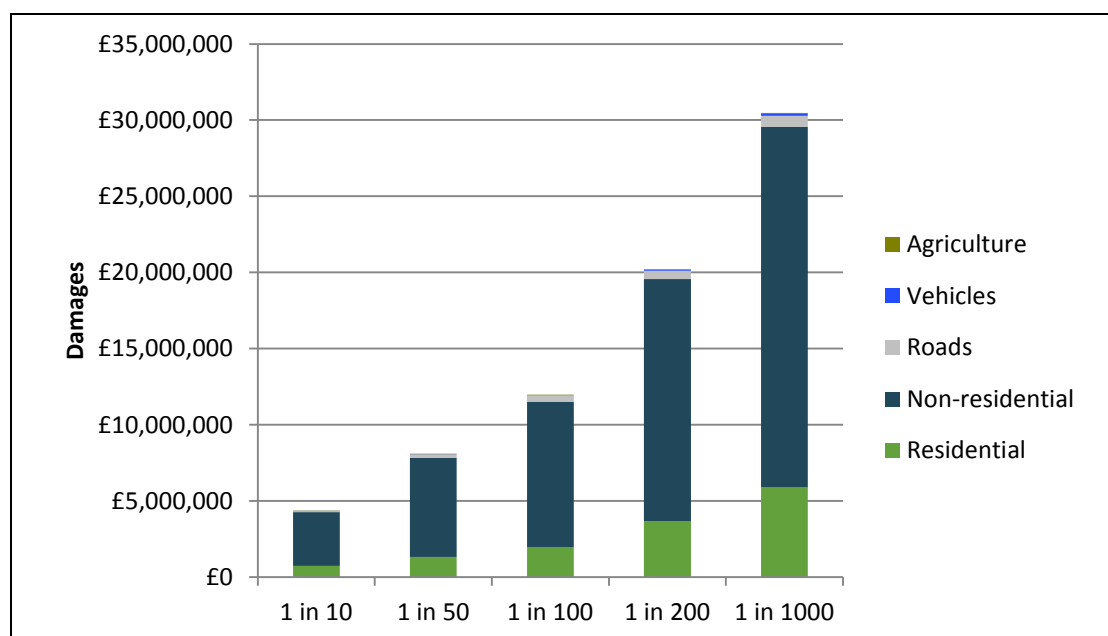
The figures presented for Annual Average Damages include damages to residential properties, non-residential properties, transport and agriculture.

The risk of flooding to utilities in Table 1 does not include Scottish Water data. Scottish Water undertook a national assessment of above ground assets at medium

likelihood of flooding (including water treatment works, wastewater treatment works and pumping stations). Within this Potentially Vulnerable Area there is one asset identified as being at risk of flooding.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 8,100)	50	180	260
Non-residential properties (total 700)	40	90	100
People	110	400	570
Community facilities	<10 Emergency services	<10 Emergency services	<10 Emergency services
Utilities	<10	10	10
Transport links (excluding minor roads)	2 A roads, 2 B roads at 28 locations	3 A roads, 2 B roads at 82 locations	3 A roads, 2 B roads at 94 locations
Environmental designated areas (km <sup>2</sup> )	0.1	0.1	0.1
Designated cultural heritage sites	2	2	2
Agricultural land (km <sup>2</sup> )	0.2	0.3	0.3

**Table 1:** Summary of flooding impacts



**Figure 2:** Damages by flood likelihood

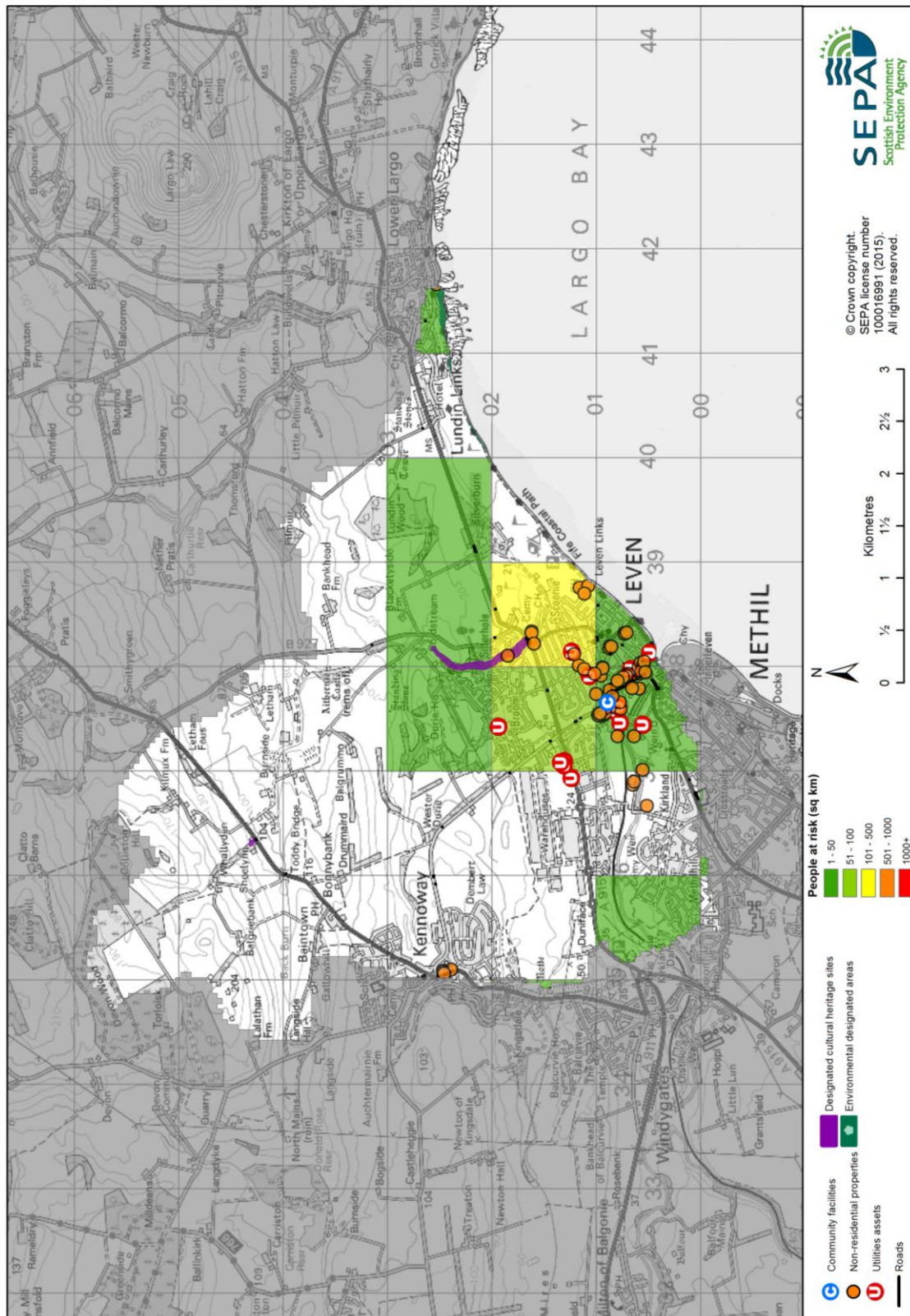


Figure 3: Impacts of flooding

## History of flooding

One significant flood has been recorded in this Potentially Vulnerable Area. This occurred on 6 February 2001 when widespread flooding problems were recorded across Fife after heavy snow falls over two days were followed by a thaw combined with prolonged rainfall. Problems were made worse by exceptionally high tides. High river levels on the River Leven caused drainage problems resulting in flooding in Leven including Shorehead, Riverside Road, Bridge Street and Leven Vale trading estate.

## Objectives to manage flooding in Potentially Vulnerable Area 10/03

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 Leven Potentially Vulnerable Area.

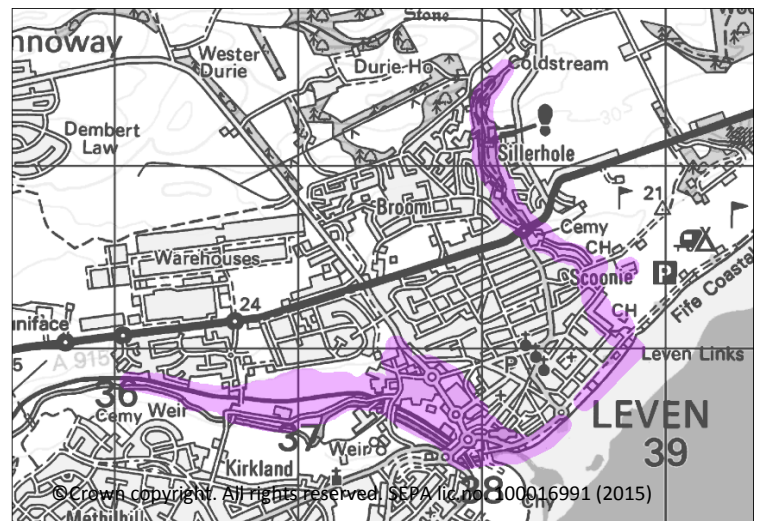
### Reduce economic damages to residential and non-residential properties and risk to people in Leven caused by flooding from the River Leven and Scoonie Burn

Indicators:

- 90 people
- £53,000 Annual Average Damages from residential properties
- £330,000 Annual Average Damages from non-residential properties

Objective ID: 10006, 10007

Target area:



Target area	Objective	ID	Indicators within PVA
Leven and Eastern Methil	Reduce economic damages and number of residential properties at risk of surface water flooding in Leven and Eastern Methil where practical	10004	* See note below
Applies across Forth Estuary Local Plan District	Avoid an overall increase in flood risk	10001	<ul style="list-style-type: none"> <li>• 180 residential properties</li> <li>• £820,000 Annual Average Damages</li> </ul>
Applies across Forth Estuary Local Plan District	Reduce overall flood risk	10099	<ul style="list-style-type: none"> <li>• 180 residential properties</li> <li>• £820,000 Annual Average Damages</li> </ul>
Applies across Forth Estuary 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 10/03 there are 160 residential properties at risk and Annual Average Damages of £150,000.

## Actions to manage flooding in Potentially Vulnerable Area 10/03

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 Leven Potentially Vulnerable Area.

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

<b>Action (ID):</b>	<b>NEW FLOOD WARNING (100990010)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	SEPA		
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	The area under consideration includes properties affected by flooding in Fife and Perth and Kinross and is likely to include Leven. 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.		

<b>Action (ID):</b>	<b>FLOOD PROTECTION STUDY (100060005)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties and risk to people in Leven caused by flooding from the River Leven and Scoonie Burn (10006, 10007)		
<b>Delivery lead:</b>	Fife Council		
<b>Priority:</b>	National: <b>38 of 168</b>	Within local authority:	<b>6 of 16</b>
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	A flood protection study has been recommended for Leven to assess whether flood storage on Scoonie Burn, modification of conveyance, direct flood defences, sediment management and natural flood management could reduce flood risk. The study should also investigate the viability of property level protection. Natural flood management options that should be considered include river/		



	floodplain restoration and sediment management. The assessment should consider these actions in combination and the impacts on flood risk upstream and downstream of each action.
<b>Potential impacts</b>	
<b>Economic:</b>	The study could benefit 26 residential properties and 52 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £8.3 million.
<b>Social:</b>	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 and socially vulnerable people located within the flood protection study area. In addition the study could benefit one emergency service, five utilities and two roads located within the study area. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.
<b>Environmental:</b>	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. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. The physical condition of a number of rivers within the study area is identified by SEPA to be at less than good status. These include River Leven, Kennoway Burn, Lochty Burn, Gairney Water and North Queich River (water body IDs 6301, 6303, 6312, 6315, 6320). Opportunities to improve the condition of these rivers should be considered by coordinating with river basin management planning. 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 Firth of Forth Special Protection Area. Conservation areas, gardens and designed landscapes, listed buildings, Sites of Special Scientific Interest, Ramsar sites and ancient woodlands are also present in the study area and could be positively or negatively impacted.

<b>Action (ID):</b>	<b>SURFACE WATER PLAN/STUDY (100040018)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Leven and Eastern Methil where practical (10004)		
<b>Delivery lead:</b>	Fife Council		
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2027</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>SURFACE WATER PLAN/STUDY (100040019)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Leven and Eastern Methil where practical (10004)		

<b>Delivery lead:</b>	Scottish Water in partnership with local authorities		
<b>Status:</b>	<b>Ongoing</b>	Indicative delivery:	<b>2016-2027</b>
<b>Description:</b>	An integrated catchment study will be carried out to support the surface water management plan process and improve knowledge and understanding of surface water flood risk and interactions with other sources of flooding e.g. with the sewer network, watercourses and the sea.		

<b>Action (ID):</b>	<b>STRATEGIC MAPPING AND MODELLING (100990019)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<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>MAINTAIN FLOOD WARNING (100990030)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	SEPA		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Continue to maintain the Lower Largo and the Leven and Methil flood warning areas which are part of the Firth of Forth and Tay coastal flood warning scheme.		

<b>Action (ID):</b>	<b>FLOOD FORECASTING (100990009)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	SEPA		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	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.		

<b>Action (ID):</b>	<b>SELF HELP (100990011)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	—		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	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.		

<b>Action (ID):</b>	<b>AWARENESS RAISING (100990013)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	Responsible authorities		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	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. SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with Fife Council and community resilience groups and participate in property level protection events delivered by the Scottish Flood Forum where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.		

<b>Action (ID):</b>	<b>MAINTENANCE (100990007)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	Fife 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 (100990014)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	Category 1 and 2 Responders		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<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> <p>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.</p>		

<b>Action (ID):</b>	<b>PLANNING POLICIES (100010001)</b>		
<b>Objective (ID):</b>	Avoid an overall increase in flood risk (10001) Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	Planning authority		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<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>		