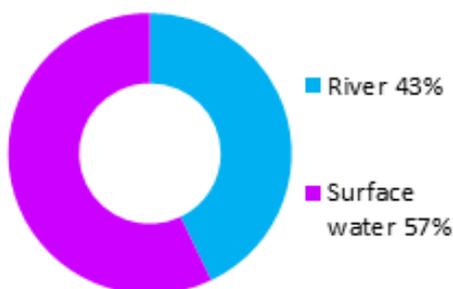


## Kinross, Milnathort, Glenrothes and Kinglassie (Potentially Vulnerable Area 10/04)

Local Plan District	Local authority	Main catchment
Forth Estuary	Fife Council, Perth and Kinross Council	River Leven (Fife)

### Summary of flooding impacts



#### At risk of flooding

- 210 residential properties
- 150 non-residential properties
- £1.2 million 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

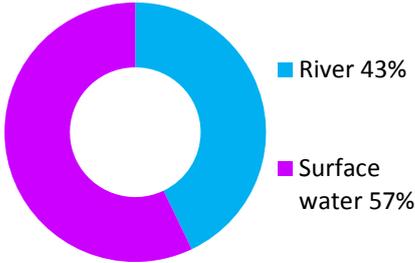
The actions below have been selected to manage flood risk.

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	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Actions

# Kinross, Milnathort, Glenrothes and Kinglassie (Potentially Vulnerable Area 10/04)

Local Plan District	Local authority	Main catchment
Forth Estuary	Fife Council, Perth and Kinross Council	River Leven (Fife)

Background	
<p>This Potentially Vulnerable Area is 201km<sup>2</sup> and includes the northern half of the River Leven catchment (shown below). It includes Glenrothes, Kinross and Milnathort. The main watercourses are the River Leven and its tributaries, the Lochty Burn, North and South Queich and the Back Burn.</p>  <p><small>© Crown copyright. SEPA licence number 100016991 (2015). All rights reserved.</small></p>	<p>The area has a risk of river and surface water flooding. The majority of damages in this Potentially Vulnerable Area are caused by surface water flooding.</p> <p>There are approximately 210 residential properties and 150 non-residential properties at risk of flooding. The Annual Average Damages are approximately £1.2 million.</p>  <p><b>Figure 1: Annual Average Damages by flood source</b></p>

## Summary of flooding impacts

The greatest risk of flooding is in Glenrothes and Milnathort from rivers and surface water.

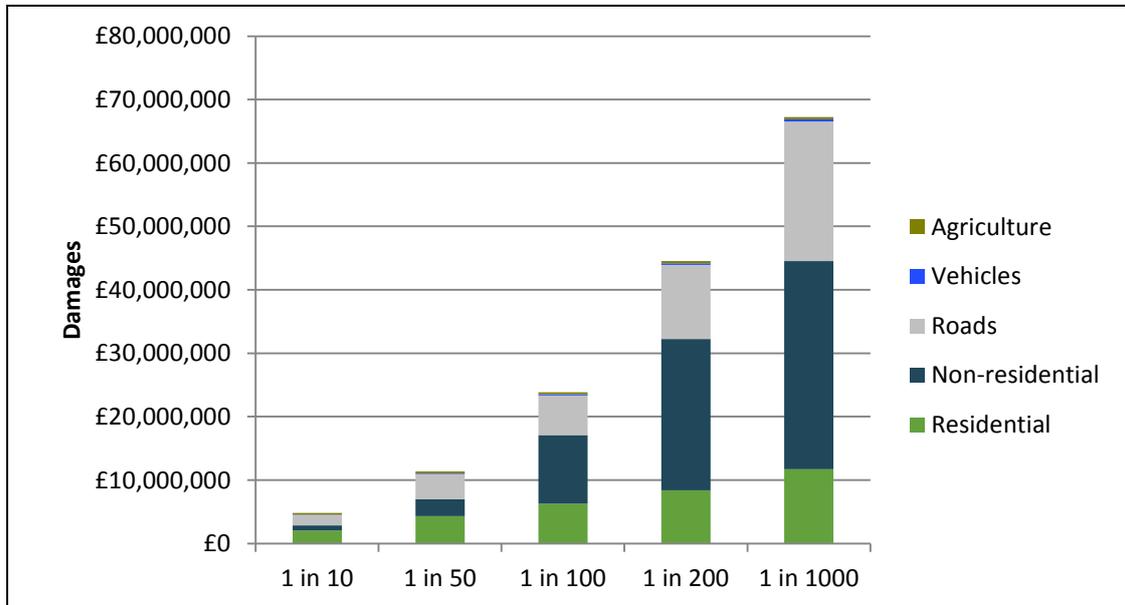
The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, protected sites and agricultural land is summarised in Table 1.

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 roads, notably the A91, A971 and A911. 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 26,000)	60	210	320
Non-residential properties (total 2,700)	50	150	200
People	130	470	710
Community facilities	<10 Educational buildings	<10 Includes: educational buildings and healthcare facilities	<10 Includes: educational buildings and healthcare facilities
Utilities	<10	30	40
Transport links (excluding minor roads)	1 M road (M90), 7 A roads, 9 B roads at 205 locations  2 railway routes at 13 locations: Fife Circle Perth to Ladybank	1 M road (M90), 7 A roads, 9 B roads at 326 locations  2 railway routes at 16 locations: Fife Circle Perth to Ladybank  Fife Airport	1 M road (M90), 7 A roads, 9 B roads at 360 locations  2 railway routes at 16 locations: Fife Circle Perth to Ladybank  Fife Airport
Environmental designated areas (km <sup>2</sup> )	46.5	46.5	46.5
Designated cultural heritage sites	7	8	8
Agricultural land (km <sup>2</sup> )	8.0	10.5	11.1

**Table 1:** Summary of flooding impacts



**Figure 2:** Damages by flood likelihood

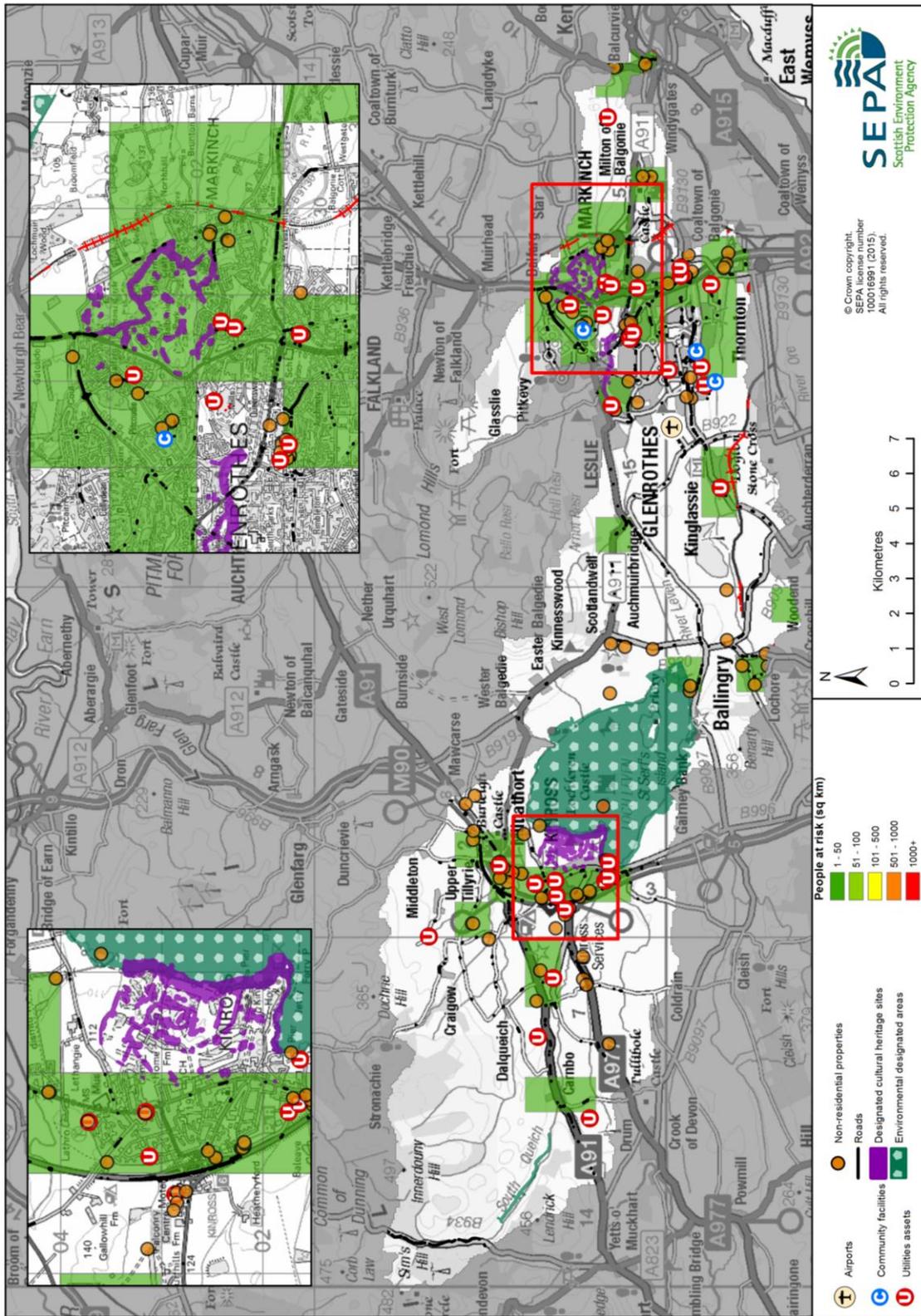


Figure 3: Impacts of flooding

## History of flooding

The following significant floods have been recorded in this area:

- 6 June 2009: Heavy rain caused surface water flooding in areas of Fife and Perth and Kinross, including Milnathort.
- 13 December 2006: The centre of Milnathort was flooded from Back Burn affecting a number of non-residential and residential properties. In Kinross, properties on the Industrial Estate, Queich Place, High Street and the auction mart were affected by the South Queich flooding.
- 13-14 January 1993: The centre of Milnathort was flooded from Back Burn. The South Queich also flooded, affecting houses and industrial properties in the South of Kinross.

## Objectives to manage flooding in Potentially Vulnerable Area 10/04

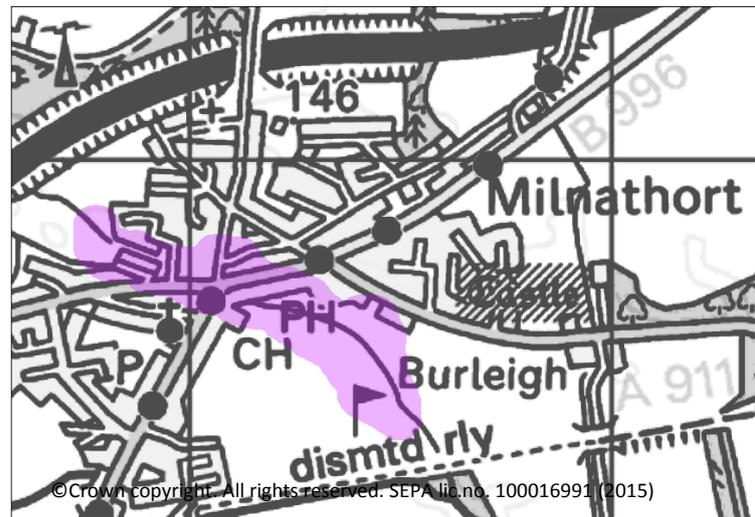
Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target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

**Accept that significant flood risk in Milnathort is being managed appropriately. Maintain existing actions that reduce the risk of flooding in Milnathort from the Back Burn.**

Indicators:

- 40 residential and non-residential properties protected (1 in 100 year standard of protection)
- £260,000 damages avoided

Target area:



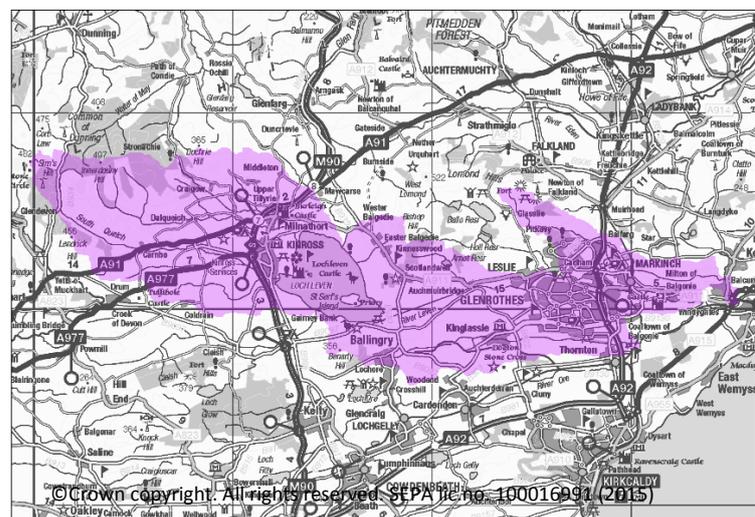
Objective ID: 10010

**Reduce economic damages to residential and non-residential properties in the Kinross, Milnathort, Glenrothes and Kinglassie Potentially Vulnerable Area caused by river flooding**

Indicators:

- £180,000 Annual Average Damages from residential properties
- £250,000 Annual Average Damages from non-residential properties

Target area:



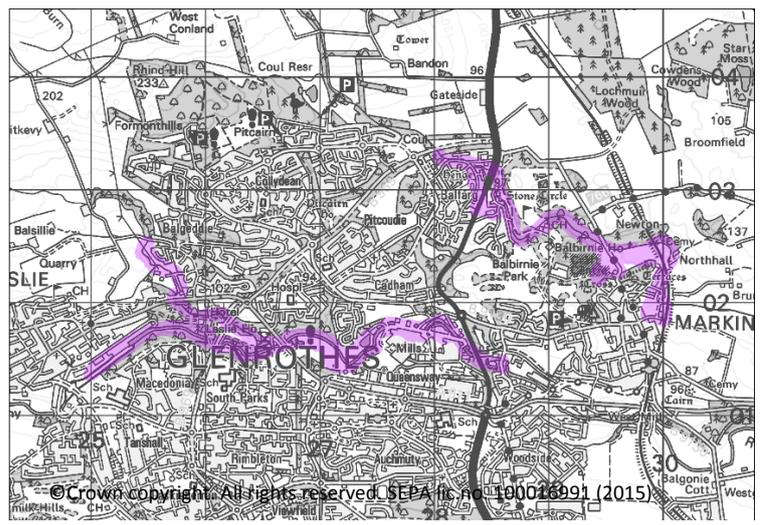
Objective ID: 10011

## Reduce risk to people in Glenrothes from river flooding

Indicators:

Target area:

- 30 people



Objective ID: 10012

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
Milnathort	Reduce economic damages and number of residential properties at risk of surface water flooding in Milnathort where practical	10008	* See note below
Glenrothes and Markinch	Reduce economic damages and number of residential properties at risk of surface water flooding in Glenrothes and Markinch where practical	10103	* 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>• 210 residential properties</li> <li>• £1.2 million Annual Average Damages</li> </ul>
Applies across Forth Estuary Local Plan District	Reduce overall flood risk	10099	<ul style="list-style-type: none"> <li>• 210 residential properties</li> <li>• £1.2 million 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 10/04 there are 160 residential properties at risk and Annual Average Damages of £700,000.

## Actions to manage flooding in Potentially Vulnerable Area 10/04

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 Kinross, Milnathort, Glenrothes and Kinglassie 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	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 SCHEME/WORKS (100080006)</b>				
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Milnathort where practical (10008)				
<b>Delivery lead:</b>	Perth and Kinross Council				
<b>Priority:</b>	National:		Within local authority:		
	<b>19 of 42</b>		<b>2 of 4</b>		
<b>Status:</b>	<b>Under development</b>	Indicative delivery:	<b>2016-2021</b>		
<b>Description:</b>	A flood protection scheme has been proposed for Milnathort to address surface water flooding. The scheme would consist of pumping stations and provide a 1 in 100 year (plus climate change) standard of protection.				
<b>Potential impacts</b>					
<b>Economic:</b>	The proposed scheme may benefit 66 residential properties and 13 non-residential properties at risk for a 1 in 100 year flood. Estimated damages avoided are £4.6 million. The flood protection scheme has an estimated benefit cost ratio of 3.0.				
<b>Social:</b>	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. There may be negative impacts through disturbance to the local community during the construction phase.				
<b>Environmental:</b>	Flood protection schemes can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. 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 Loch Leven Special Protection Area.				

<b>Action (ID):</b>	<b>FLOOD PROTECTION SCHEME/WORKS (100110006)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in the Kinross, Milnathort, Glenrothes and Kinglassie Potentially Vulnerable Area caused by river flooding (10011)		
<b>Delivery lead:</b>	Perth and Kinross Council		
<b>Priority:</b>	National:	Within local authority:	
	<b>28 of 42</b>	<b>3 of 4</b>	
<b>Status:</b>	<b>Under development</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	A flood protection scheme has been proposed for South Kinross to address flooding from the South Queich, Gelly Burn and Clash Burn. The scheme would consist of flood defence walls and provide a 1 in 200 year (plus climate change) standard of protection.		
<b>Potential impacts</b>			
<b>Economic:</b>	The scheme has estimated damages avoided of £5.5 million and an estimated benefit cost ratio of 1.48.		
<b>Social:</b>	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. There may be negative impacts through disturbance to the local community during the construction phase.		
<b>Environmental:</b>	Flood protection schemes can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. The proposed flood protection works are located on the North Queich River (water body ID 6320). 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. 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 Loch Leven Special Protection Area.		

<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 Kinross. 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 (100120005)</b>		
<b>Objective (ID):</b>	Reduce risk to people in Glenrothes from river flooding (10012)		
<b>Delivery lead:</b>	Fife Council		
<b>Priority:</b>	National:	Within local authority:	
	<b>79 of 168</b>	<b>11 of 16</b>	
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2022-2027</b>
<b>Description:</b>	An Integrated Catchment Study looking at surface water management in Glenrothes is scheduled to start in 2017. This study may identify future study needs that would be taken forward in the second flood risk management cycle.		
<b>Potential impacts</b>			
<b>Economic:</b>	Potential damages avoided of up to £5.1 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.		
<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. River Leven (water body ID 6301) is located within the study area and the physical condition of this river is 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.		

<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>2016-2021</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>SURFACE WATER PLAN/STUDY (100080018)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Milnathort where practical (10008)		
<b>Delivery lead:</b>	Perth and Kinross Council		
<b>Status:</b>	<b>Not started</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>SURFACE WATER PLAN/STUDY (101030018)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Glenrothes and Markinch where practical (10103)		
<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 (101030019)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Glenrothes and Markinch where practical (10103)		
<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 PROTECTION SCHEME (100100017)</b>		
<b>Objective (ID):</b>	Accept that significant flood risk in Milnathort is being managed appropriately. Maintain existing actions that reduce the risk of flooding in Milnathort from the Back Burn. (10010)		
<b>Delivery lead:</b>	Perth and Kinross Council		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Continue to maintain the existing flood protection schemes along the Back Burn in Milnathort. These include the Milnathort Flood Protection Schemes completed in 2006 and 2010.		

<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>COMMUNITY FLOOD ACTION GROUPS (100100012)</b>		
<b>Objective (ID):</b>	Accept that significant flood risk in Milnathort is being managed appropriately. Maintain existing actions that reduce the risk of flooding in Milnathort from the Back Burn. (10010)		
<b>Delivery lead:</b>	Community		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	A community resilience group operates in this area. The group is supported by Perth and Kinross Council and works with various communities including Milnathort to develop community resilience plans.		

<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>	<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>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.</p> <p>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 (100990007)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (10099)		
<b>Delivery lead:</b>	Fife Council and Perth and Kinross 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>	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.		

<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>	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.		