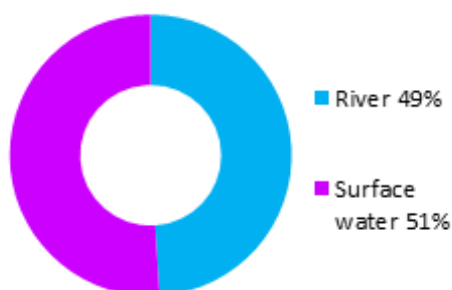


Cowdenbeath (Candidate Potentially Vulnerable Area 10/28c)

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

Summary of flooding impacts



At risk of flooding

- 150 residential properties
- 40 non-residential properties
- £580,000 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	<i>Community flood action groups</i>	<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
<i>Maintain flood protection scheme</i>	<i>Strategic mapping and modelling</i>	Flood forecasting	Self help	Maintenance	Planning policies

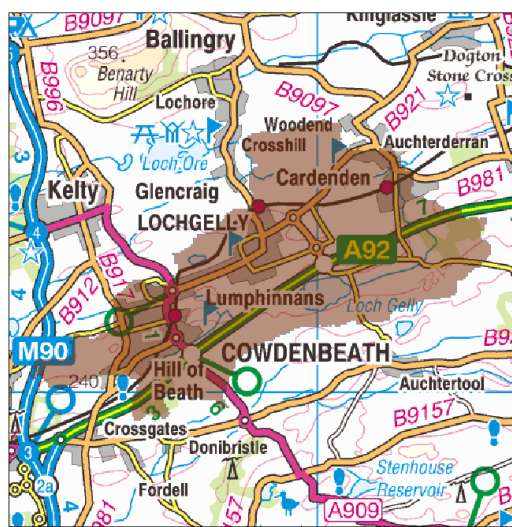
Actions

Cowdenbeath (Candidate Potentially Vulnerable Area 10/28c)

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

Background

This candidate Potentially Vulnerable Area is 21km² and part of the Firth of Forth catchment (shown below). It includes the urban areas of Cowdenbeath and Bowhill.



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Damages in this candidate Potentially Vulnerable Area are evenly distributed between surface water and river flooding.

There are approximately 150 residential properties and 40 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £580,000.

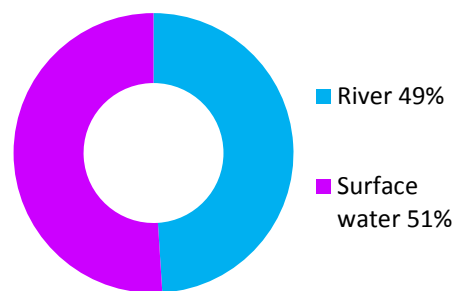


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Whilst this area was not identified as a Potentially Vulnerable Area in 2011, the information on flood risk from the new hazard maps identified that this area should be regarded as a candidate future Potentially Vulnerable Area due to the potential risk to people and properties.

The highest risks of river flooding are at Cardenden (Bowhill) from the River Ore and the Den Burn, and at Cowdenbeath from the Lochgelly Burn. The highest risk of surface water flooding is in Cowdenbeath.

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 candidate 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.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 9,800)	70	150	180
Non-residential properties (total 930)	20	40	60
People	150	340	400
Community facilities	0	0	0
Utilities	<10	<10	<10
Transport links (excluding minor roads)	2 A roads, 3 B roads at 41 locations 1 Railway route at 4 locations: Dunfermline to Thornton junction	1 M road (M90), 2 A roads, 3 B roads at 63 locations 1 Railway route at 4 locations: Dunfermline to Thornton junction	1 M road (M90), 2 A roads, 3 B roads at 70 locations 1 Railway route at 4 locations: Dunfermline to Thornton junction
Environmental designated areas (km ²)	<0.1	0.1	0.1
Designated cultural heritage sites	0	0	0
Agricultural land (km ²)	0.8	1.0	1.0

Table 1: Summary of flooding impacts

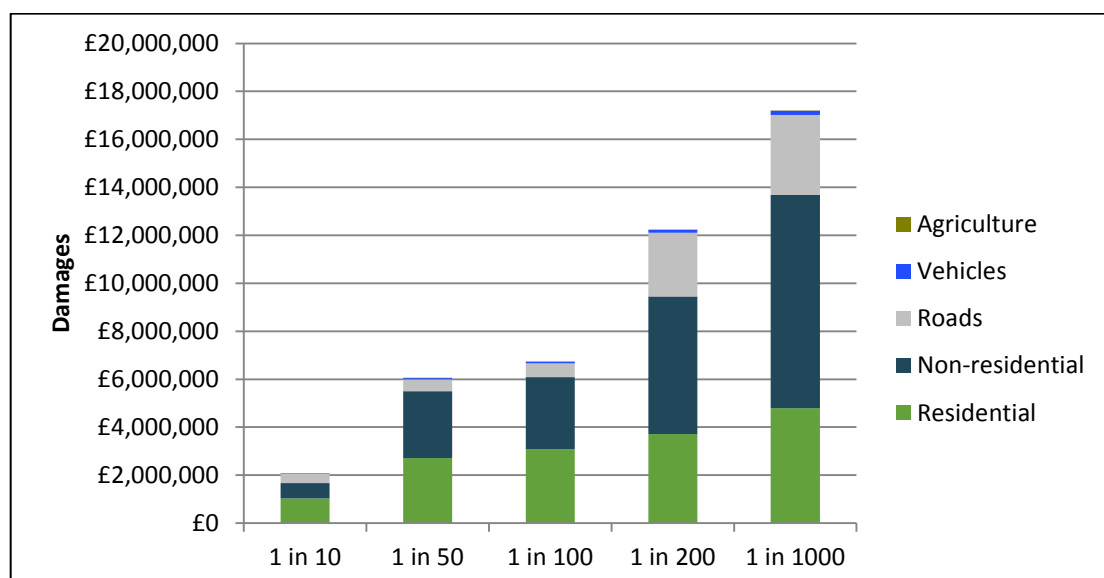


Figure 2: Damages by flood likelihood

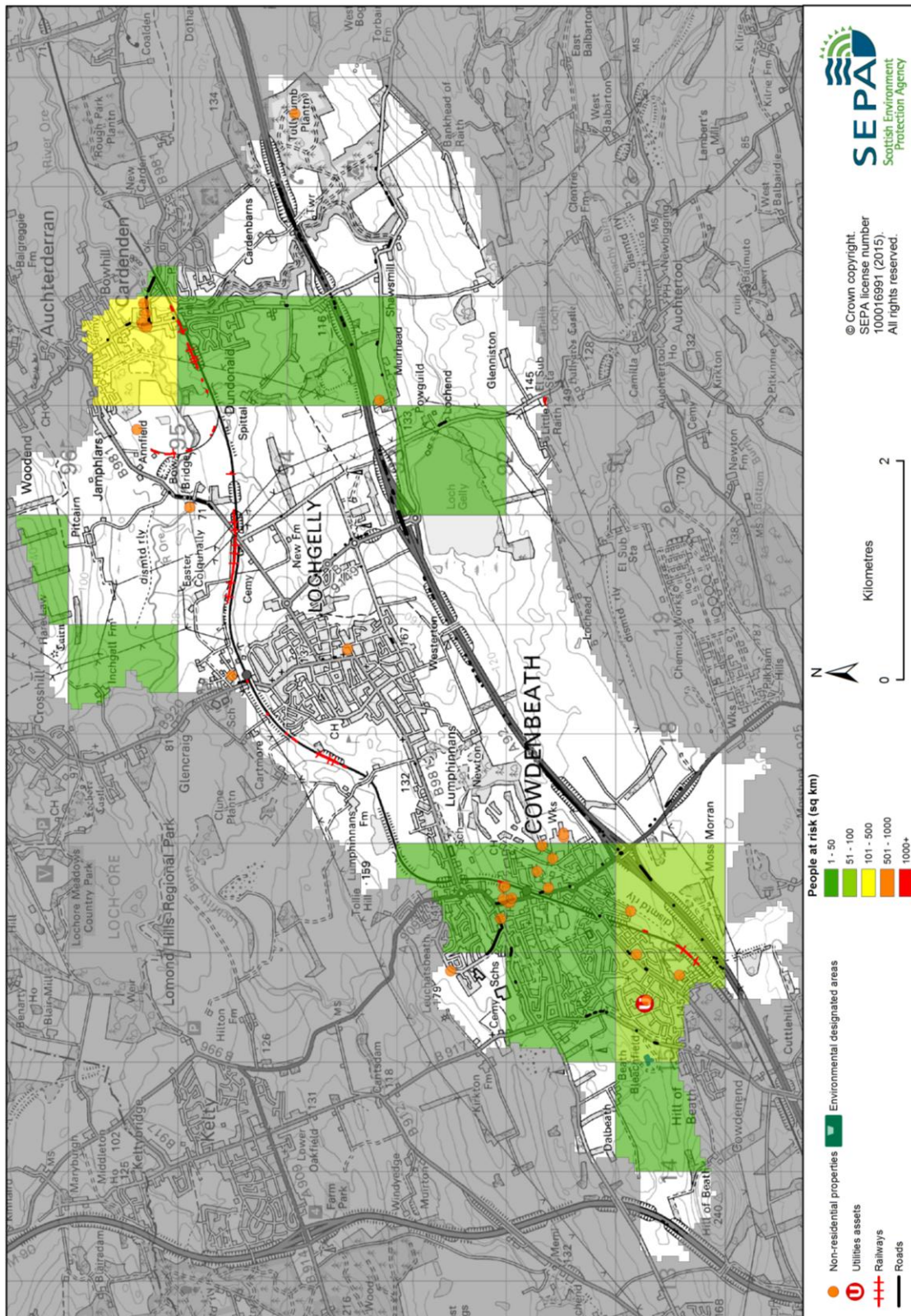


Figure 3: Impacts of flooding

History of flooding

One significant river flood event has been recorded in this area. On 8 February 1903 roads were flooded, and significant areas of land were under water from the River Ore and River Lochty. This flooding also caused the Dunfermline-Thornton junction of railway line to be submerged.

Objectives to manage flooding in Potentially Vulnerable Area 10/28c

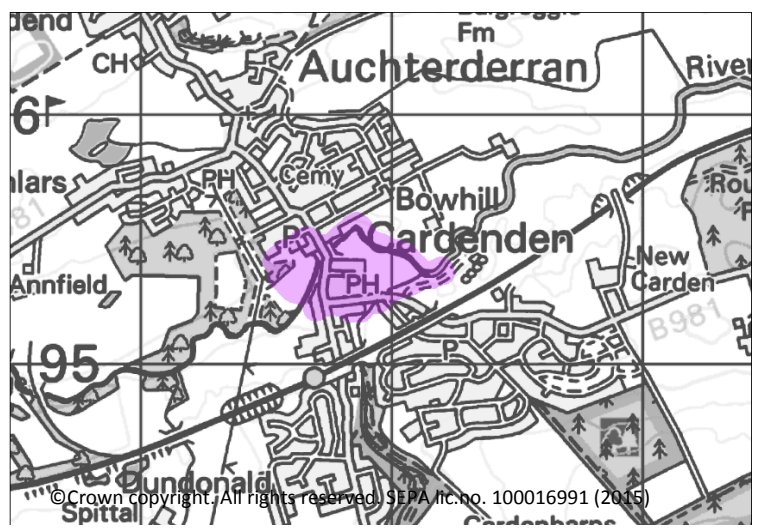
Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target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

Reduce economic damages to residential and non-residential properties from river flooding in Cardenden (Bowhill)

Indicators:

- £60,000 Annual Average Damages from residential properties

Target area:



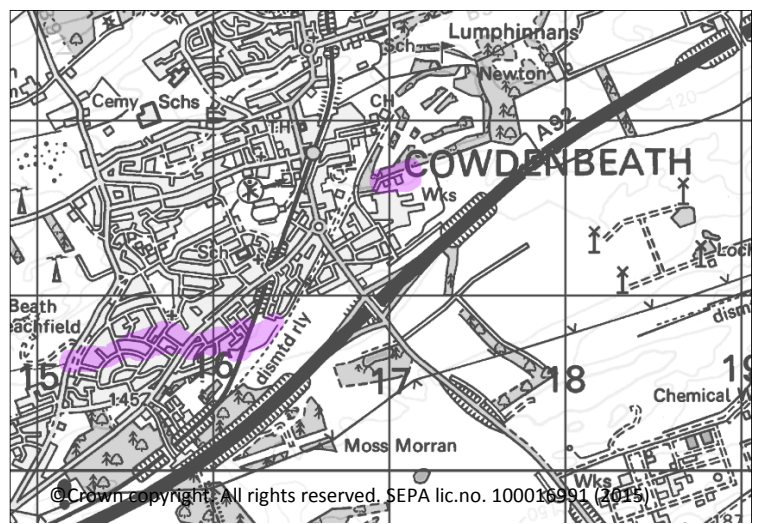
Objective ID: 10097

Reduce economic damages to residential and non-residential properties from river flooding in Cowdenbeath

Indicators:

- £71,000 Annual Average Damages from residential properties
- £23,000 Annual Average Damages from non-residential properties

Target area:



Objective ID: 10098

Target area	Objective	ID	Indicators within PVA
Cowdenbeath, Leuchatsbeath and Lumphinnans	Reduce economic damages and number of residential properties at risk of surface water flooding in Cowdenbeath, Leuchatsbeath and Lumphinnans where practical	10092	* See note below
Applies across Forth Estuary Local Plan District	Avoid an overall increase in flood risk	10001	<ul style="list-style-type: none"> • 150 residential properties • £580,000 Annual Average Damages
Applies across Forth Estuary Local Plan District	Reduce overall flood risk	10099	<ul style="list-style-type: none"> • 150 residential properties • £580,000 Annual Average Damages
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 10/28c there are 80 residential properties at risk and Annual Average Damages of £290,000.

Actions to manage flooding in Potentially Vulnerable Area 10/28c

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 Cowdenbeath Candidate Potentially Vulnerable Area.

Selected actions					
<i>Flood protection scheme/works</i>	<i>Natural flood management works</i>	New flood warning	<i>Community flood action groups</i>	<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
<i>Maintain flood protection scheme</i>	<i>Strategic mapping and modelling</i>	Flood forecasting	Self help	Maintenance	Planning policies

Action (ID):	NEW FLOOD WARNING (100990010)		
Objective (ID):	Reduce overall flood risk (10099)		
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 Bowhill which is affected by flooding from the River Ore. 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 (100970005)		
Objective (ID):	Reduce economic damages to residential and non-residential properties from river flooding in Cardenden (Bowhill) (10097)		
Delivery lead:	Fife Council		
Priority:	National:	Within local authority:	
	70 of 168	8 of 16	
Status:	Not started	Indicative delivery:	2016-2021
Description:	A flood protection study has been recommended for Cardenden to assess whether flood storage, flood defences, sediment management and natural flood management could reduce flood risk. The study should also consider the viability of property level protection. Natural flood management options that should be		

	considered include river/ floodplain restoration and sediment management. 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 55 residential properties and five non-residential properties at risk of flooding in this location, with potential damages avoided of up to £4.7 million.
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 Den Burn (water body ID 6311) 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. Listed buildings and ancient woodlands are also present in the study area and could be positively or negatively impacted.

Action (ID):	FLOOD PROTECTION STUDY (100980005)		
Objective (ID):	Reduce economic damages to residential and non-residential properties from river flooding in Cowdenbeath (10098)		
Delivery lead:	Fife Council		
Priority:	National:		Within local authority:
	104 of 168		14 of 16
Status:	Not started	Indicative delivery:	2016-2021
Description:	A flood protection study has been recommended for Cowdenbeath to assess whether flood storage, modification of conveyance and sediment management could 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 study could benefit 42 residential properties and five non-residential properties at risk of flooding in this location, with potential damages avoided of up to £2.5 million.		
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.		
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		

Environmental: through natural flood management. Den Burn (water body ID 6311) 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.

Action (ID):	SURFACE WATER PLAN/STUDY (100920018)		
Objective (ID):	Reduce economic damages and number of residential properties at risk of surface water flooding in Cowdenbeath, Leuchatsbeath and Lumphinnans where practical (10092)		
Delivery lead:	Fife Council		
Status:	Not started	Indicative delivery:	2016-2027
Description:	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.		

Action (ID):	SURFACE WATER PLAN/STUDY (100920019)		
Objective (ID):	Reduce economic damages and number of residential properties at risk of surface water flooding in Cowdenbeath, Leuchatsbeath and Lumphinnans where practical (10092)		
Delivery lead:	Scottish Water in partnership with local authorities		
Status:	Ongoing	Indicative delivery:	2016-2027
Description:	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.		

Action (ID):	FLOOD FORECASTING (100990009)		
Objective (ID):	Reduce overall flood risk (10099)		
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 (100990011)		
Objective (ID):	Reduce overall flood risk (10099)		
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 (100990013)		
Objective (ID):	Reduce overall flood risk (10099)		
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 (100990007)		
Objective (ID):	Reduce overall flood risk (10099)		
Delivery lead:	Fife 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 (100990014)		
Objective (ID):	Reduce overall flood risk (10099)		
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> <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>		

Action (ID):	PLANNING POLICIES (100010001)		
Objective (ID):	Avoid an overall increase in flood risk (10001) Reduce overall flood risk (10099)		
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>		