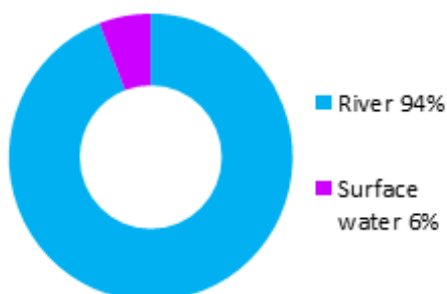


## Comrie (Potentially Vulnerable Area 08/14)

Local Plan District	Local authority	Main catchment
Tay	Perth and Kinross Council, Stirling Council	River Earn

### Summary of flooding impacts



#### At risk of flooding

- 510 residential properties
- 100 non-residential properties
- £2.0 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	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

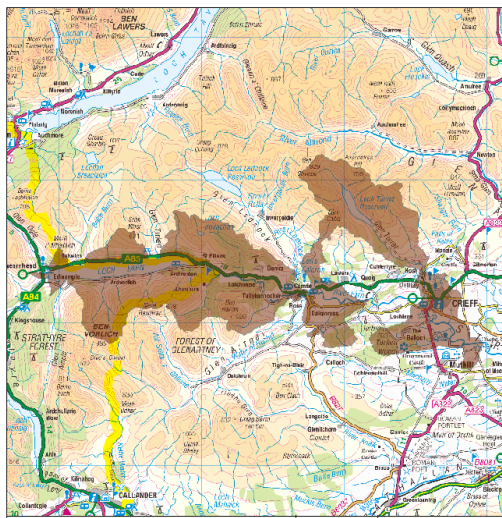
Actions

## Comrie (Potentially Vulnerable Area 08/14)

Local Plan District	Local authority	Main catchment
Tay	Perth and Kinross Council, Stirling Council	River Earn

### Background

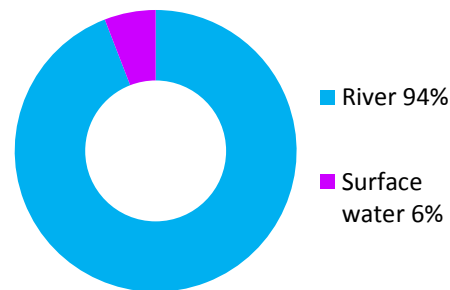
This Potentially Vulnerable Area is 168km<sup>2</sup> (shown below). It is situated in the upper reaches of the River Earn catchment and includes Comrie and Crieff. The main watercourses are the River Earn, River Lednock and the Turret Burn. It also includes Loch Earn and the Turret Reservoir.



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There are approximately 510 residential properties and 100 non-residential properties at risk of flooding. The Annual Average Damages are approximately £2.0 million.

The majority of flood damages are caused by river flooding.



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

### Summary of flooding impacts

The highest risk of flooding is in Comrie from the River Earn and River Lednock and in Crieff from the Turret Burn.

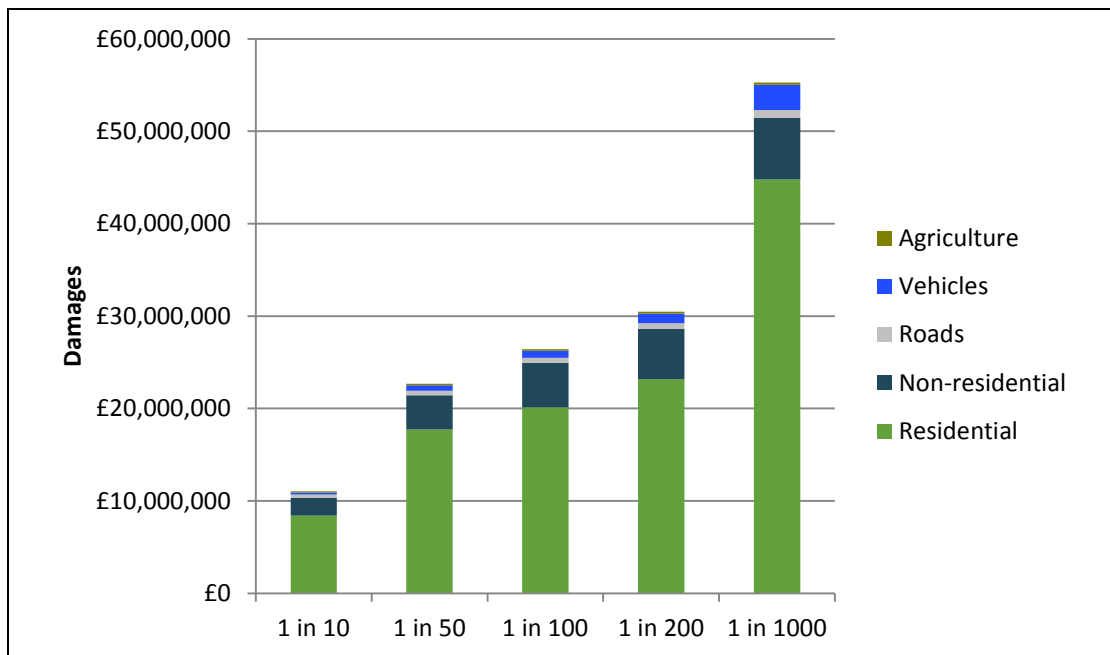
The risk of flooding to people, property, community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

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 A85 is also impacted at a number of locations. The location of the impacts of flooding is shown in Figure 3.

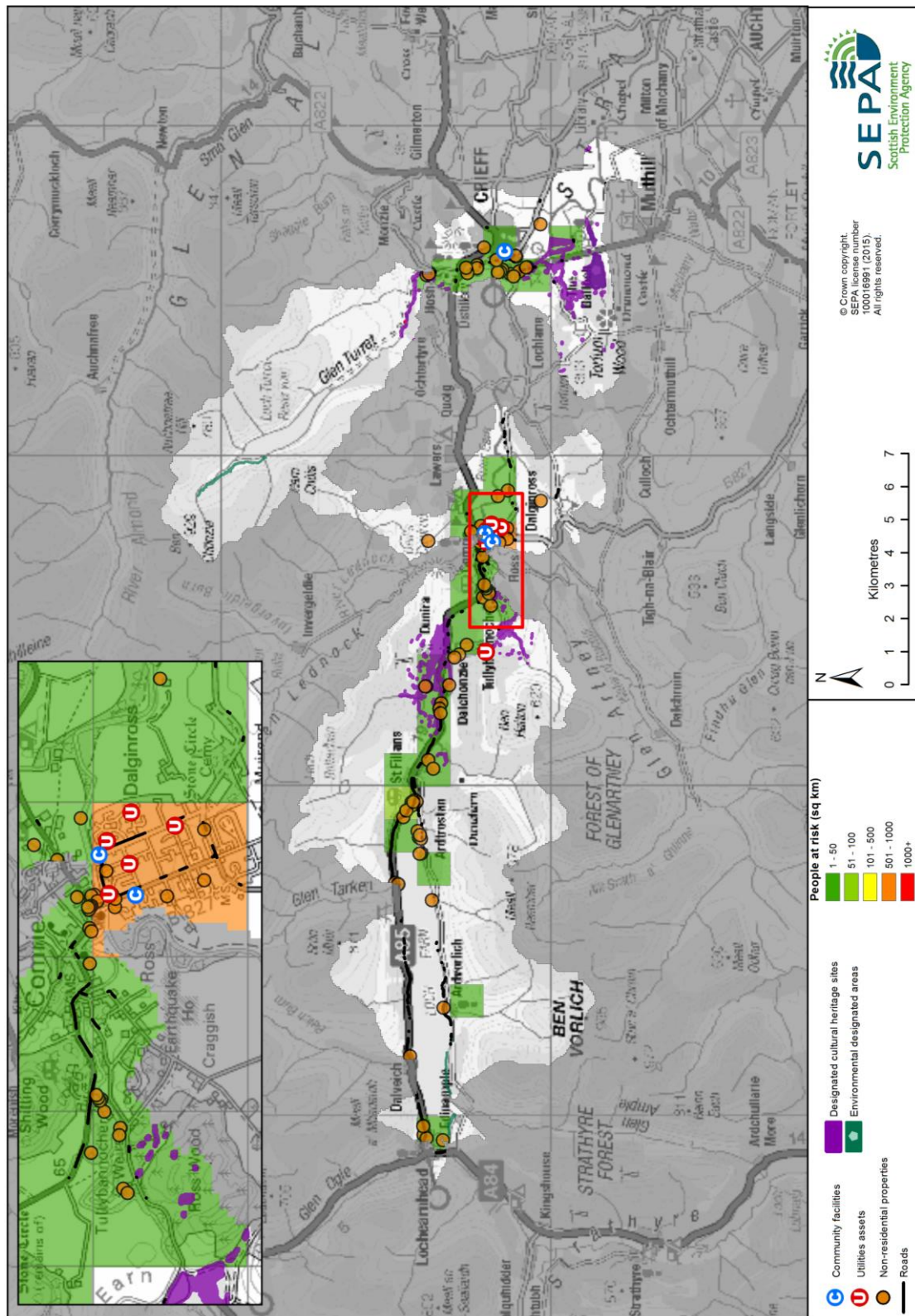
The figures presented for Annual Average Damages include damages to residential properties, non-residential properties, transport and agriculture.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 4,800)	220	510	830
Non-residential properties (total 1,100)	50	100	120
People	490	1,100	1,800
Community facilities	<10 Emergency services	<10 Includes: emergency services and healthcare facilities	<10 Includes: emergency services and healthcare facilities
Utilities assets	<10	<10	10
Transport links (excluding minor roads)	3 A roads, 2 B roads at 86 locations	3 A roads, 2 B roads at 89 locations	3 A roads, 2 B roads at 109 locations
Environmental designated areas (km <sup>2</sup> )	0.8	0.8	0.8
Designated cultural heritage sites	7	7	9
Agricultural land (km <sup>2</sup> )	5.6	8.2	9.9

**Table 1:** Summary of flooding impacts



**Figure 2:** Damages by flood likelihood



**Figure 3: Impacts of flooding**

## History of flooding

The area has a long history of flooding. The following notable floods have been recorded in this area:

- 19 November 2012: Approximately 150 properties were flooded in Dalginross from the Water of Ruchill.
- 27 August 2012: Approximately 60 properties were flooded in Dalginross from the Water of Ruchill.
- 19 February 1997: A number of streets and houses in Dalginross were flooded, as well as farm land and farm buildings.
- 16 January 1993: Widespread flooding across the Tay Catchment resulted in over £20 million of damage. The flooding is known to have affected Comrie.
- 2 February 1948: Telephone lines and power was disrupted within the Strathearn district when power lines were damaged. Two hundred acres of land were flooded.
- 22 January 1928: Wettest January on record at the time caused flooding across Perth and Kinross including Comrie and Crieff. The River Tay reached 5.77m above normal levels at Smeaton's Bridge in Perth
- 8 November 1926: Flooding throughout the area due to the River Earn and tributaries rising up to a depth of 3.5m in some places. Gas works flooded in Comrie. Residential properties, shops and commercial properties also affected.
- January 1909: The road between Comrie and St Fillans at East Tullybannocher was reported to have five to seven feet of water over it due to snow melt. Farmlands at Carse of Trowan and Carse of Lennoch were under water. A lake reportedly formed between Comrie and Monzievaird.
- 17 March 1903: Railway infrastructure seriously affected causing major disruption to traffic after large stretch of embankment was washed away by flooding at New Comrie.

## Objectives to manage flooding in Potentially Vulnerable Area 08/14

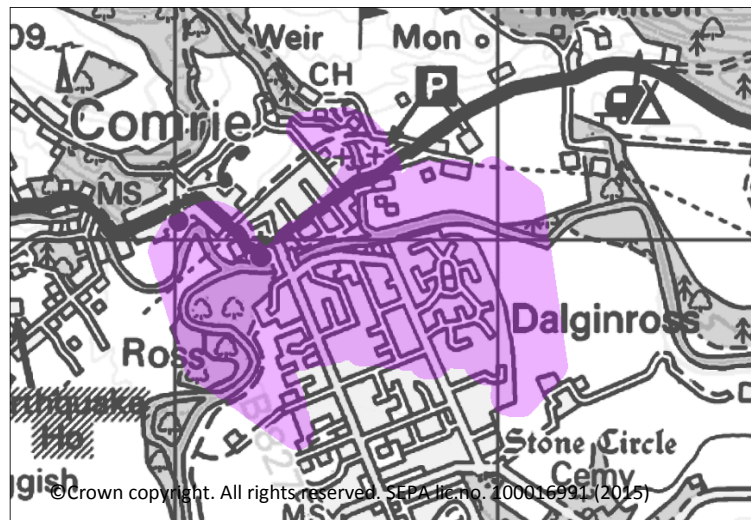
Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target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

### Reduce economic damages to residential and non-residential properties in Comrie caused by flooding from the River Earn and River Lednock

Indicators:

- £1.3 million Annual Average Damages from residential properties
- £280,000 Annual Average Damages from non-residential properties

Target area:



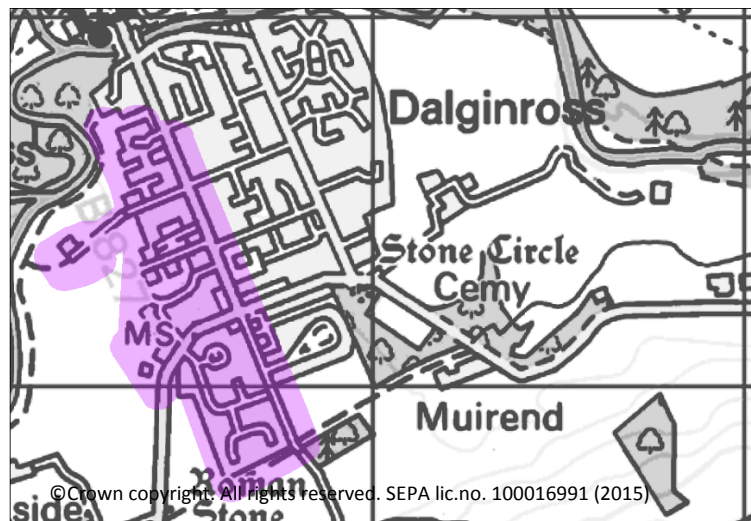
Objective ID: 8033

### Accept that significant flood risk in Dalginross is being managed appropriately. Maintain existing actions that reduce flood risk in Dalginross caused by flooding from the Water of Ruchill.

Indicators:

- 90 residential properties and one non-residential properties protected (100 year event)

Target area:



Objective ID: 8035

Target area	Objective	ID	Indicators within PVA
Comrie	Reduce the physical or disruption risk related to the transport network for roads	8303	<ul style="list-style-type: none"> <li>• 7.4km of road at 43 locations on the A85</li> </ul>
Applies across Tay Local Plan District	Avoid an overall increase in flood risk	8001	<ul style="list-style-type: none"> <li>• 510 residential properties</li> <li>• £2.0 million Annual Average Damages</li> </ul>
Applies across Tay Local Plan District	Reduce overall flood risk	8041	<ul style="list-style-type: none"> <li>• 510 residential properties</li> <li>• £2.0 million Annual Average Damages</li> </ul>
Applies across Tay 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 08/14

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 Comrie Potentially Vulnerable Area.

Selected actions					
Flood protection scheme/works	<i>Natural flood management works</i>	<i>New flood warning</i>	Community flood action groups	<i>Property level protection scheme</i>	<i>Site protection plans</i>
<i>Flood protection study</i>	<i>Natural flood management study</i>	Maintain flood warning	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

<b>Action (ID):</b>	<b>FLOOD PROTECTION SCHEME/WORKS (80330006)</b>				
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in Comrie caused by flooding from the River Earn and River Lednock (8033)				
<b>Delivery lead:</b>	Perth and Kinross Council				
<b>Priority:</b>	National:		Within local authority:		
	<b>7 of 42</b>		<b>1 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 Comrie to reduce the combined flood risk from the Water of Ruchill, River Earn and River Lednock. The scheme would consist of flood defences and flood storage areas. The scheme would provide a 1 in 100 year standard of protection.				
<b>Potential impacts</b>					
<b>Economic:</b>	The proposed scheme may benefit 382 residential properties and 15 non-residential properties at risk of flooding in this location, with estimated damages avoided of £89 million. The flood protection scheme has an estimated benefit cost ratio of 6.7.				
<b>Social:</b>	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. In addition there are one emergency service and one healthcare facility which have been identified as potentially benefitting from this action. 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. A number of nationally and locally designated				



<b>Environmental:</b>	sites are present in the study area and could be positively or negatively impacted. These include conservation areas, National Scenic Areas, scheduled monuments, gardens and designed landscapes, listed buildings, national parks, Sites of Special Scientific Interest and ancient woodlands.
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<b>Action (ID):</b>	<b>FLOOD PROTECTION SCHEME/WORKS (8303021)</b>		
<b>Objective (ID):</b>	Reduce the physical or disruption risk related to the transport network for roads (8303)		
<b>Delivery lead:</b>	Transport Scotland		
<b>Status:</b>	<b>Under development</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	Transport Scotland will carry out civil engineering work which will reduce the risk of flooding on identified sections of the trunk road.		

<b>Action (ID):</b>	<b>STRATEGIC MAPPING AND MODELLING (80410016)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<b>Delivery lead:</b>	SEPA		
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	SEPA will seek to develop flood mapping in the Upper Earn area to improve understanding of flood risk. The extent and timing of improvements will depend on detailed scoping and data availability.		

<b>Action (ID):</b>	<b>STRATEGIC MAPPING AND MODELLING (80410019)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<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 carry out an 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 (80330017)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in Comrie caused by flooding from the River Earn and River Lednock (8033)		
<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 existing flood defences and flood protection works in Comrie. These include the Ruchill Flood Protection Scheme constructed in the 1960s and flood protection works carried out in 2013.		

<b>Action (ID):</b>	<b>MAINTAIN FLOOD PROTECTION SCHEME (80350017)</b>		
<b>Objective (ID):</b>	Accept that significant flood risk in Dalginross is being managed appropriately. Maintain existing actions that reduce flood risk in Dalginross caused by flooding from the Water of Ruchill. (8035)		
<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 Ruchill flood protection scheme constructed in 1960 that protects Dalginross from river flooding.		

<b>Action (ID):</b>	<b>MAINTAIN FLOOD WARNING (80410030)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<b>Delivery lead:</b>	SEPA		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Continue to maintain the Carse of Lennoch to Lochlane and the Crieff to Innerpeffray flood warning areas which are part of the Earn river flood warning scheme. Continue to maintain the Comrie flood warning area which covers properties at risk of flooding from the Water of Ruchill and/or the River Earn as part of the Ruchill river flood warning scheme.		

<b>Action (ID):</b>	<b>FLOOD FORECASTING (80410009)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<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 (80330012)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in Comrie caused by flooding from the River Earn and River Lednock (8033)		
<b>Delivery lead:</b>	Community		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Comrie Resilience Group operates in this area. The membership includes Perth and Kinross Council, SEPA, Scottish Fire and Rescue and the Scottish Flood Forum. The group aims to reduce flooding of businesses and communities in Comrie. The resilience group was formed as a response to severe flooding in Comrie in August and November 2012.		

<b>Action (ID):</b>	<b>SELF HELP (80410011)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<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. Perth and Kinross Council is piloting a project for flood protection products for properties in flood risk areas.		

<b>Action (ID):</b>	<b>AWARENESS RAISING (80410013)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<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 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 (80410007)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<b>Delivery lead:</b>	Local authorities, asset / land managers		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<p>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.</p>		

<b>Action (ID):</b>	<b>EMERGENCY PLANS/RESPONSE (80410014)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (8041)		
<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>		

<b>Action (ID):</b>	<b>PLANNING POLICIES (80010001)</b>		
<b>Objective (ID):</b>	Avoid an overall increase in flood risk (8001) Reduce overall flood risk (8041)		
<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.		