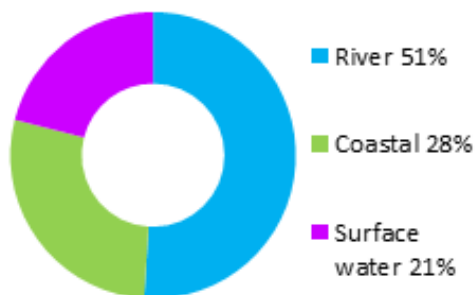


# Falkirk, Grangemouth, Lauriston, Denny, Redding, Dunipace, Cumbernauld, Carron and Stenhousemuir (Potentially Vulnerable Area 10/11)

Local Plan District	Local authority	Main catchment
Forth Estuary	Falkirk Council, North Lanarkshire Council, Stirling Council	Forth Estuary (south) coastal

## Summary of flooding impacts



### At risk of flooding

- 2,000 residential properties
- 330 non-residential properties
- £3.8 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>	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

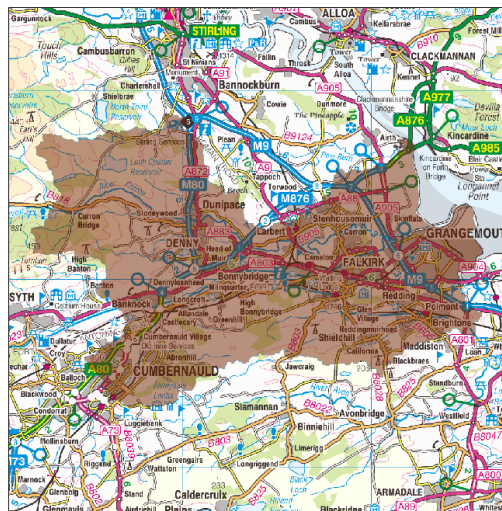
# Falkirk, Grangemouth, Lauriston, Denny, Redding, Dunipace, Cumbernauld, Carron and Stenhousemuir (Potentially Vulnerable Area 10/11)

Local Plan District	Local authority	Main catchment
Forth Estuary	Falkirk Council, North Lanarkshire Council, Stirling Council	Forth Estuary (south) coastal

## Background

This large Potentially Vulnerable Area is 215km<sup>2</sup> and part of the Firth of Forth catchment (shown below). It contains the towns of Grangemouth, Falkirk, Denny and eastern Cumbernauld.

The main watercourse is the River Carron, flowing from the Carron Valley Reservoir in the west through Dunipace and Denny. Here it meets the Bonny Water and continues eastward through Larbert, Stenhousemuir and Carron before finally flowing into the Firth of Forth at Grangemouth.

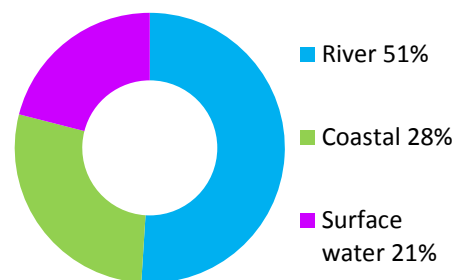


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Other notable watercourses include the Westquarter Burn and the Bonny Water. The area has a risk of river, coastal and surface water flooding.

Interaction of coastal and river flooding occurs on the River Carron, as well as downstream of the River Avon and on the Pow Burn south of Airth. Coastal flooding affects areas of Grangemouth, Carron, Carronshore and Falkirk. However, the majority of flood damages are caused by river flooding.

There are approximately 2,000 residential properties and 330 non-residential properties at risk of flooding. The Annual Average Damages are approximately £3.8 million.



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

## Summary of flooding impacts

The highest risk of river flooding is from the River Carron in the Carron / Carronshore area; the Grange Burn in Grangemouth; the Westquarter Burn in Falkirk Westquarter; and the River Carron, Avon Burn and Castlerankine Burn in Denny and Dunipace. The highest risk of coastal flooding is from the Firth of Forth in Grangemouth, and Carron / Carronshore. The highest risk of surface water flooding is in Falkirk, Denny and Cumbernauld.

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.

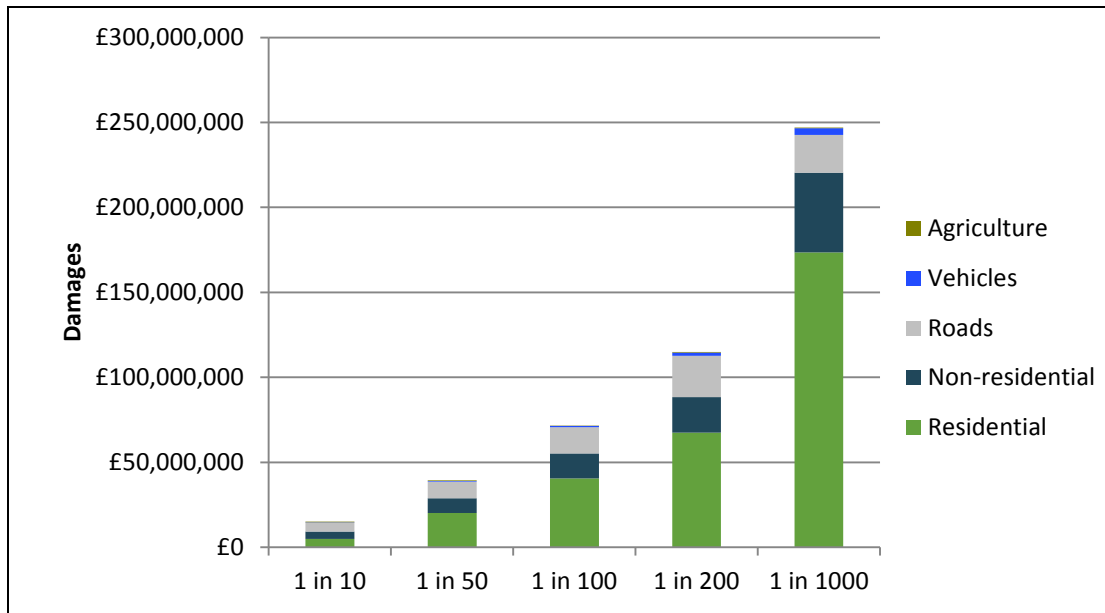
The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. The location of the impacts of flooding is shown in Figure 3.

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

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 are six assets identified as being at risk of flooding.

	<b>1 in 10</b>	<b>1 in 200</b>	<b>1 in 1000</b>
	<b>High likelihood</b>	<b>Medium likelihood</b>	<b>Low likelihood</b>
<b>Residential properties (total 70,000)</b>	250	2,000	5,800
<b>Non-residential properties (total 5,900)</b>	80	330	980
<b>People</b>	550	4,400	13,000
<b>Community facilities</b>	<10 Educational buildings	<10 Educational buildings	10 Includes: educational buildings, healthcare facilities and emergency services
<b>Utilities</b>	20	90	270
<b>Transport links (excluding minor roads)</b>	3 M roads (M80, M876, M9), 11 A roads, 11 B roads at 344 locations  3 Railway routes at 80 locations: Carmuir Junction to Polmont Junction Dunblane to Greenhill Lower Edinburgh Waverley to Glasgow Queen Street	3 M roads (M80, M876, M9), 12 A roads, 12 B roads at 563 locations  3 Railway routes at 115 locations: Carmuir Junction to Polmont Junction Dunblane to Larbert/Stirling Edinburgh Waverley to Glasgow Queen Street	3 M roads (M80, M876, M9), 12 A roads, 12 B roads at 614 locations  3 Railway routes at 144 locations: Carmuir Junction to Polmont Junction Dunblane to Larbert/Stirling Edinburgh Waverley to Glasgow Queen Street
<b>Environmental designated areas (km<sup>2</sup>)</b>	1.0	1.7	1.8
<b>Designated cultural heritage sites</b>	34	44	54
<b>Agricultural land (km<sup>2</sup>)</b>	6.4	8.5	10.6

**Table 1:** Summary of flooding impacts

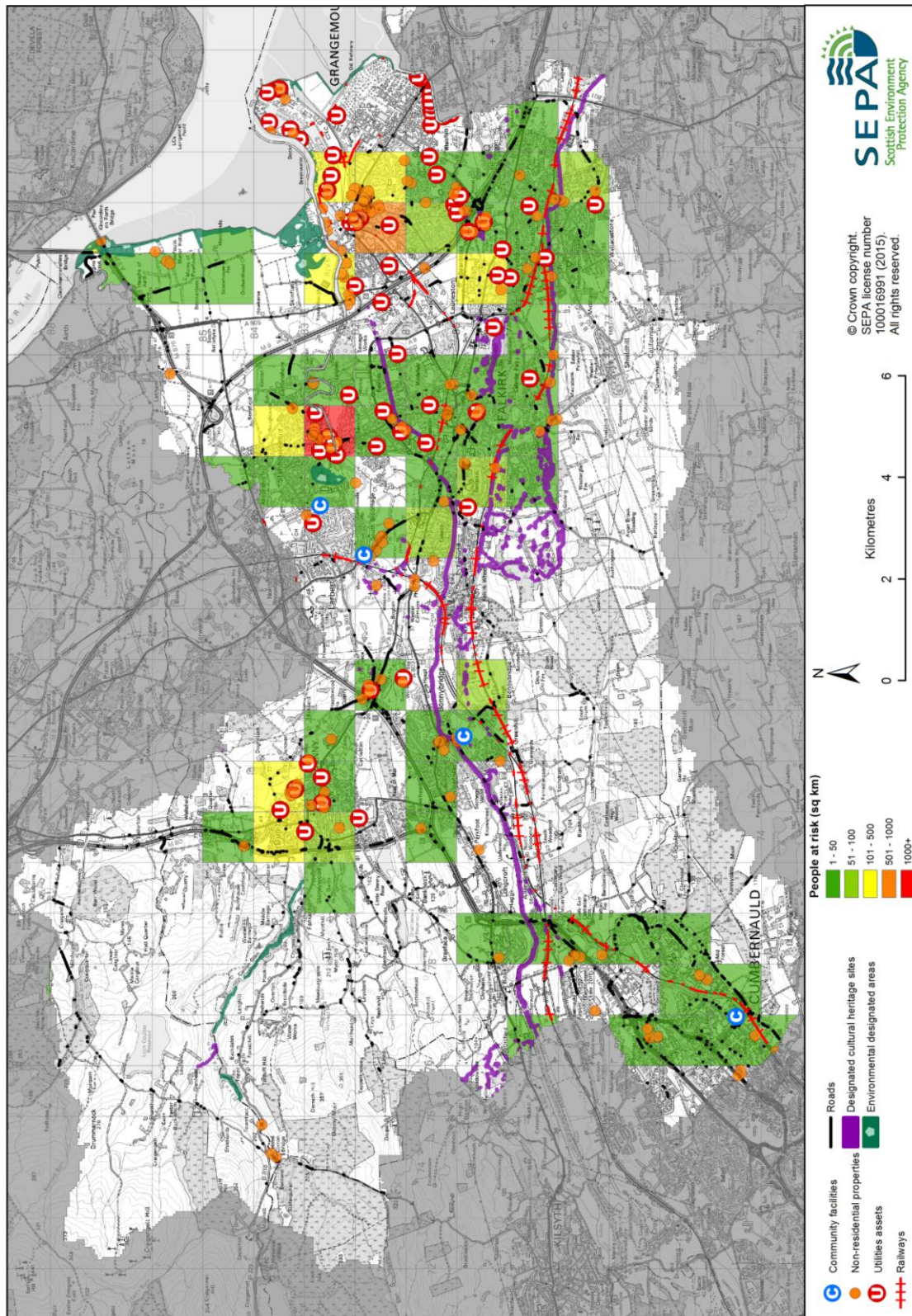


**Figure 2:** Damages by flood likelihood

## History of flooding

The following significant floods have been recorded in this area:

- 13 December 2006: Widespread flooding throughout the Falkirk area with businesses, residential properties and gardens affected. Large bus depot on Stirling Road was impacted and Anchor Burn footbridge was washed away. Flooding resulted in the closure of the A883 at Checkbar and an electricity substation was threatened. Three residential and two non-residential properties flooded at Threepwood along the River Carron. Carronside Place in Dunipace was evacuated amid fears of flooding. Flooding of the Tor Burn affected Bogend Road.
- 2002: Flooding of the Chapel Burn affected Alloa Road in Stenhousemuir, resulting in 22 properties being flooded and up to 60 properties threatened.
- 30 September 1959: Grangemouth Docks flooded from the sea with highest tides on record at 4.47m.



**Figure 3: Impacts of flooding**

## Objectives to manage flooding in Potentially Vulnerable Area 10/11

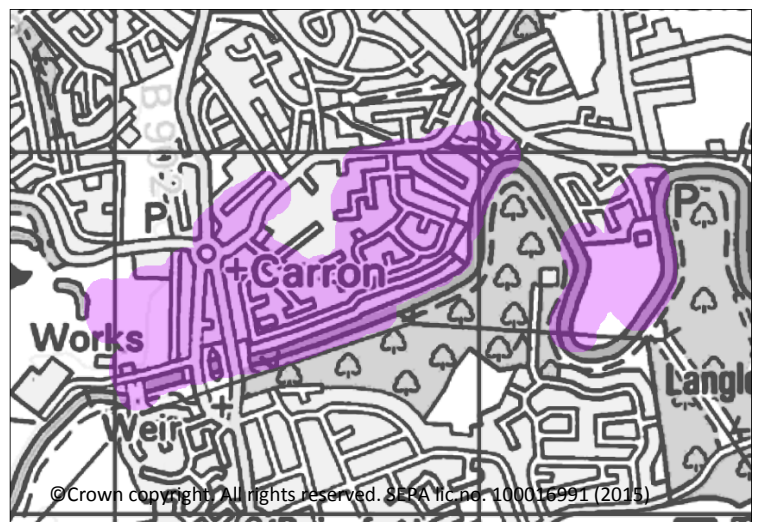
Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target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

### Reduce economic damages to residential and non-residential properties in Carron and Carronshore caused by flooding from the River Carron and coastal flooding

Indicators:

- £280,000 Annual Average Damages from residential properties
- £190,000 Annual Average Damages from non-residential properties

Target area:



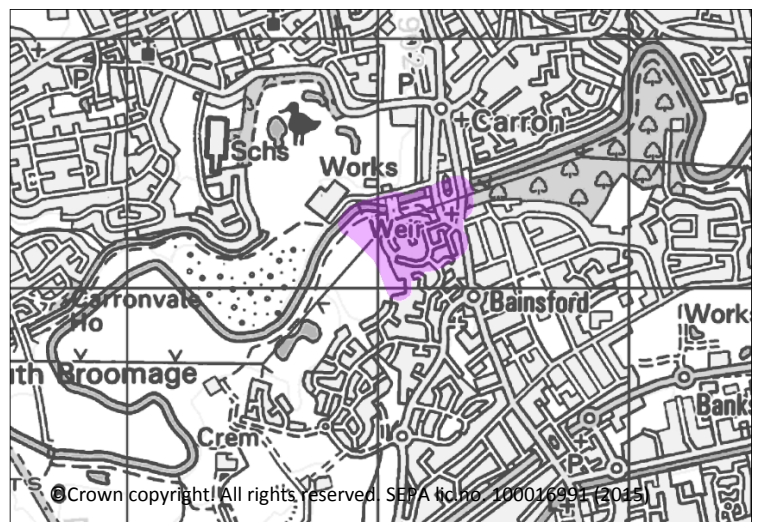
Objective ID: 10035

### Reduce economic damages to residential and non-residential properties in Falkirk caused by flooding from the River Carron

Indicators:

- £400,000 Annual Average Damages from residential properties
- £10,000 Annual Average Damages from non-residential properties

Target area:



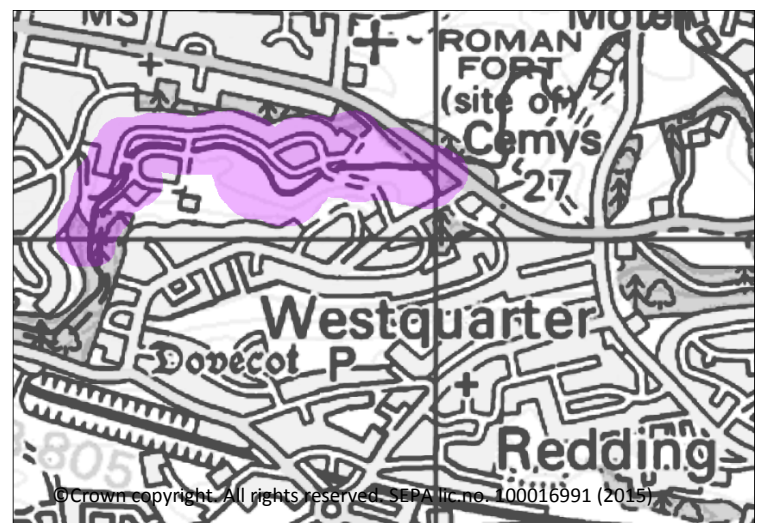
Objective ID: 10036

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

Indicators:

Target area:

- £130,000 Annual Average Damages from residential properties
- £280 Annual Average Damages from non-residential properties



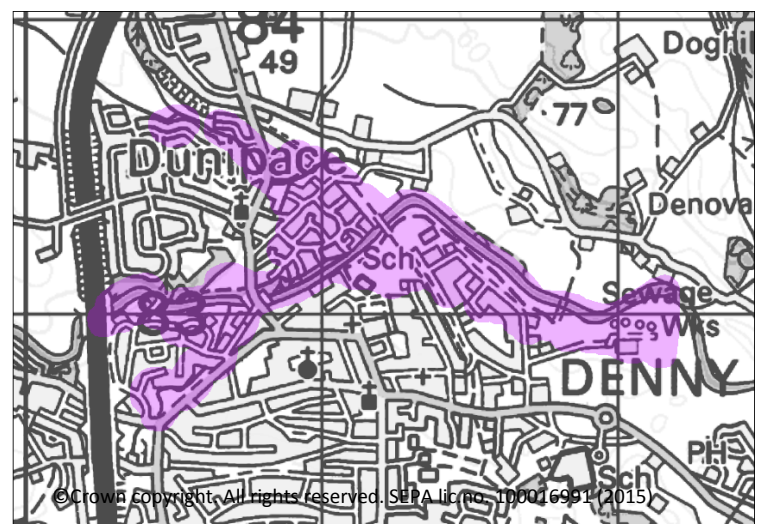
Objective ID: 10037

**Reduce economic damages to residential and non-residential properties in Denny and Dunipace caused by flooding from the River Carron, Avon Burn and Castlerankine Burn**

Indicators:

Target area:

- £260,000 Annual Average Damages from residential properties
- £42,000 Annual Average Damages from non-residential properties



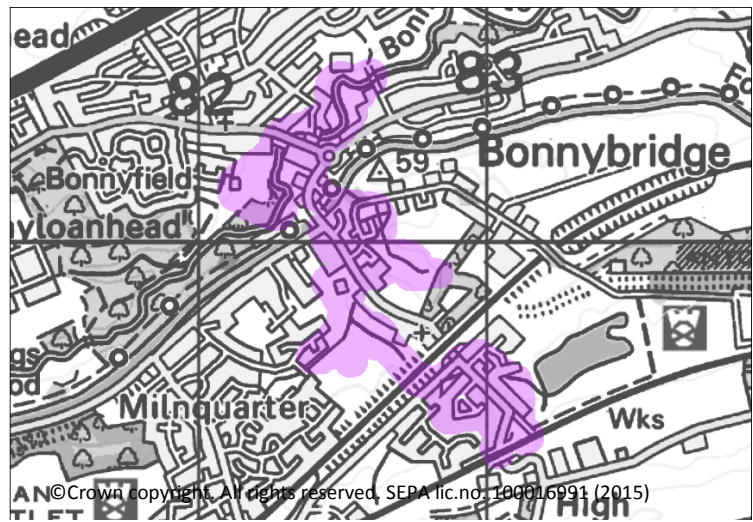
Objective ID: 10038

**Reduce economic damages to residential and non-residential properties and flood risk to community facilities in Bonnybridge and Banknock caused by flooding from the Bonny Water and its tributaries**

Indicators:

Target area:

- £52,000 Annual Average Damages from residential properties
- £69,000 Annual Average Damages from non-residential properties
- One educational building



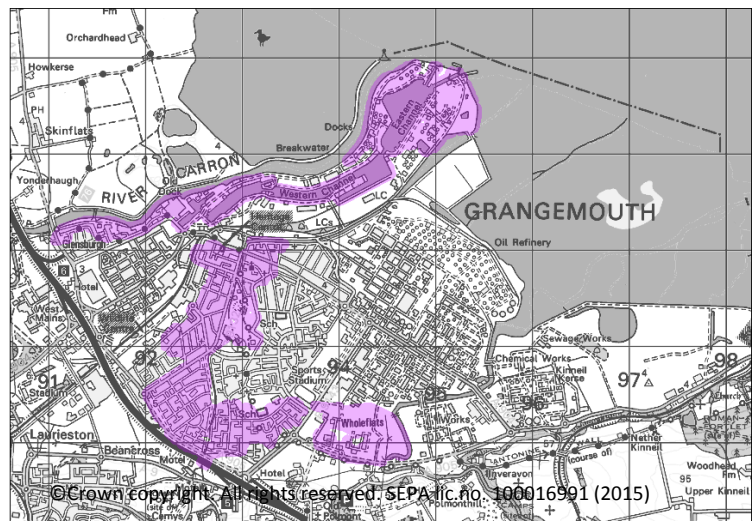
Objective ID: 10039

**Reduce economic damages to residential and non-residential properties in Grangemouth caused by river flooding and coastal flooding**

Indicators:

Target area:

- £630,000 Annual Average Damages from residential properties
- £53,000 Annual Average Damages from non-residential properties



Objective ID: 10040

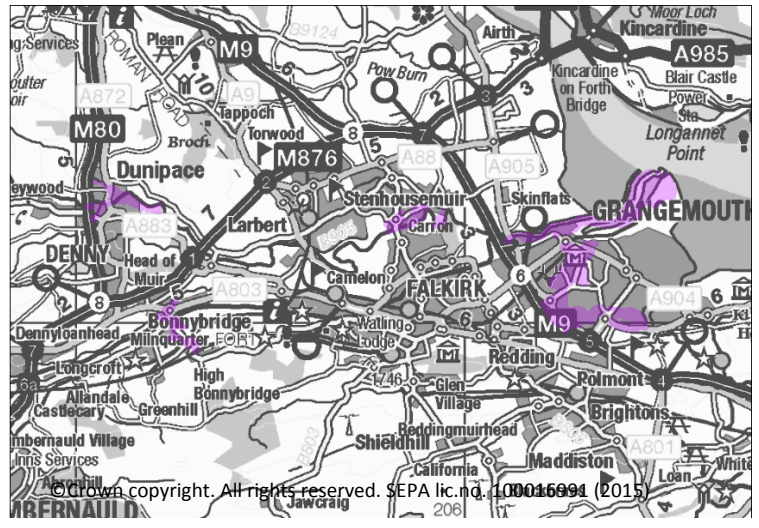


## Reduce risk to people in Bonnybridge, Denny, Carron and Grangemouth from river and coastal flooding

Indicators:

Target area:

- 2,900 people



Objective ID: 10041

Target area	Objective	ID	Indicators within PVA
Falkirk, Stenhousemuir and Carron	Reduce economic damages and number of residential properties at risk of surface water flooding in Falkirk, Stenhousemuir and Carron where practical	10033	* See note below
Cumbernauld (east)	Reduce economic damages and number of residential properties at risk of surface water flooding in Cumbernauld (east) where practical	10101	* See note below
Polmont and Maddiston	Reduce economic damages and number of residential properties at risk of surface water flooding in Polmont and Maddiston where practical	10104	* 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>• 2,000 residential properties</li> <li>• £3.8 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>• 2,000 residential properties</li> <li>• £3.8 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 10/11 there are 460 residential properties at risk and Annual Average Damages of £730,000.

## Actions to manage flooding in Potentially Vulnerable Area 10/11

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 Falkirk, Grangemouth, Lauriston, Denny, Redding, Dunipace, Cumbernauld, Carron and Stenhousemuir 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>	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

<b>Action (ID):</b>	<b>FLOOD PROTECTION SCHEME/WORKS (100400006)</b>				
<b>Objective (ID):</b>	<p>Reduce risk to people in Bonnybridge, Denny, Carron and Grangemouth from river and coastal flooding (10041)</p> <p>Reduce economic damages to residential and non-residential properties in Grangemouth caused by river flooding and coastal flooding (10040)</p> <p>Reduce economic damages to residential and non-residential properties in Falkirk caused by flooding from the River Carron (10036)</p> <p>Reduce economic damages to residential and non-residential properties in Carron and Carronshore caused by flooding from the River Carron and coastal flooding (10035)</p>				
<b>Delivery lead:</b>	Falkirk Council				
<b>Priority:</b>	National:		Within local authority:		
	<b>1 of 42</b>		<b>1 of 1</b>		
<b>Status:</b>	<b>Under development</b>	Indicative delivery:	<b>2016-2027</b>		
<b>Description:</b>	<p>A flood protection scheme has been proposed for the Grangemouth area. It would include the River Carron, Grange Burn, River Avon and the Forth Estuary shoreline. The scheme would consist of flood defences, sediment management, tidal barriers/ gates and natural flood management and would provide a 1 in 200 year standard of protection. Implementation of this scheme is likely to span a 10 year period from 2017-2027.</p>				
<b>Potential impacts</b>					
<b>Economic:</b>	<p>The proposed scheme may benefit 1261 residential properties and 99 non-residential properties at risk of flooding in this location, with</p>				

<b>Economic:</b>	estimated damages avoided of £6.0 billion. The flood protection scheme has an estimated benefit cost ratio of 58.
<b>Social:</b>	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 scheme area. 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 scheme is located on a number of rivers and a part of the Forth Estuary whose physical condition has been identified by SEPA to be at less than good status. These include the Grange Burn, part of the River Carron and the Middle Forth Estuary (water body IDs 3300, 4200 and 200436). Opportunities to improve the condition of the rivers and estuary 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 scheme will not have an adverse effect on the integrity of the Firth of Forth Special Protection Area. World Heritage Sites, scheduled monuments, listed buildings, local nature reserves, Sites of Special Scientific Interest and ancient woodlands are also present in the study area and could be positively or negatively impacted.

<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 from the River Carron and tributaries downstream of the Carron Valley Reservoir. Full scoping, infrastructure and a flood forecasting system will be required before a flood warning service can be delivered in this area. Communities that will benefit from a warning will be identified during development of the scheme.		

<b>Action (ID):</b>	<b>FLOOD PROTECTION STUDY (100400005)</b>		
<b>Objective (ID):</b>	Reduce risk to people in Bonnybridge, Denny, Carron and Grangemouth from river and coastal flooding (10041) Reduce economic damages to residential and non-residential properties in Grangemouth caused by river flooding and coastal flooding (10040) Reduce economic damages to residential and non-residential properties in Falkirk caused by flooding from the River Carron (10036) Reduce economic damages to residential and non-residential properties in Carron and Carronshore caused by flooding from the River Carron and coastal flooding (10035)		

<b>Delivery lead:</b>	Falkirk Council		
<b>Priority:</b>	National:	Within local authority:	
	<b>11 of 168</b>	<b>1 of 5</b>	
<b>Status:</b>	<b>Ongoing</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	A flood protection study is currently underway for Grangemouth to develop a flood protection scheme. The flood risk management options under consideration include flood defences, sediment management, tidal barriers/ gates and natural flood management. Natural flood management includes surge attenuation and sediment management. The study will also consider the viability of property level protection. The study is due to complete in 2017, followed by phased delivery of actions from 2018-2027.		
<b>Potential impacts</b>			
<b>Economic:</b>	The study could benefit 1261 residential properties and 99 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £6.0 billion.		
<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 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. The physical condition of a number of rivers and a part of the Forth Estuary within the study area is identified by SEPA to be at less than good status. These include the Grange Burn, parts of the River Carron, Auchenbowie Burn and the Middle Forth Estuary (water body IDs 3300, 4200, 4210 and 200436). Opportunities to improve the condition of the rivers and estuary 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. World Heritage Sites, scheduled monuments, listed buildings, local nature reserves, Sites of Special Scientific Interest and ancient woodlands are also present in the study area and could be positively or negatively impacted.		

<b>Action (ID):</b>	<b>FLOOD PROTECTION STUDY (100380005)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in Denny and Dunipace caused by flooding from the River Carron, Avon Burn and Castlerankine Burn (10038)		
<b>Delivery lead:</b>	Falkirk Council		
<b>Priority:</b>	National:	Within local authority:	
	<b>43 of 168</b>	<b>3 of 5</b>	

<b>Status:</b>	<b>Ongoing</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	Initial flood risk investigations are currently underway for Denny/ Dunipace, including modelling work. These initial investigations are due to report in 2016. It is likely that further flood protection study will be needed to assess options to manage flood risk including flood defences, sediment management and natural flood management. The study should also consider the viability of property level protection. Natural flood management options that should be considered include runoff control 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 155 residential properties and 12 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £8.6 million. Fifty of these residential and non-residential properties are at risk from high likelihood flooding and may benefit from natural flood management actions.		
<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 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. The Auchenbowie Burn (water body ID 4210) 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>FLOOD PROTECTION STUDY (100370005)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in Falkirk Westquarter caused by flooding from the Westquarter Burn (10037)		
<b>Delivery lead:</b>	Falkirk Council		
<b>Priority:</b>	National:	Within local authority:	
	<b>110 of 168</b>	<b>4 of 5</b>	
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2027</b>
<b>Description:</b>	Vegetation management and general maintenance are carried out by Falkirk Council to control erosion at Falkirk Westquarter. In future there may be a need for a flood protection study to assess whether direct flood defences and sediment management could further reduce flood risk in this area.		
<b>Potential impacts</b>			
<b>Economic:</b>	The study could benefit 67 residential properties and one non-residential property at risk of flooding in this location, with potential		

<b>Economic:</b>	damages avoided of up to £3.3 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.
<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. The Grange Burn (water body ID 3300) 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. 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 (100330018)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Falkirk, Stenhousemuir and Carron where practical (10033)		
<b>Delivery lead:</b>	Falkirk 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 (100330019)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Falkirk, Stenhousemuir and Carron where practical (10033)		
<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 (101010018)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Cumbernauld (east) where practical (10101)		
<b>Delivery lead:</b>	North Lanarkshire 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 (101010019)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Cumbernauld (east) where practical (10101)		
<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>SURFACE WATER PLAN/STUDY (101040018)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Polmont and Maddiston where practical (10104)		
<b>Delivery lead:</b>	Falkirk 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 (101040019)</b>		
<b>Objective (ID):</b>	Reduce economic damages and number of residential properties at risk of surface water flooding in Polmont and Maddiston where practical (10104)		
<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>STRATEGIC MAPPING AND MODELLING (100990016)</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>	SEPA will seek to develop flood mapping in the Dunbar to Stirling area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.		

<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 (100400017)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in Grangemouth caused by river flooding and coastal flooding (10040)		
<b>Delivery lead:</b>	Falkirk Council		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Continue to maintain the existing Grangeburn Road Flood Protection Scheme on the Grange Burn. The scheme includes a flood relief channel conveying flows to the River Avon.		

<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 Grangemouth flood warning area which is 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>COMMUNITY FLOOD ACTION GROUPS (100350012)</b>		
<b>Objective (ID):</b>	Reduce economic damages to residential and non-residential properties in Carron and Carronshore caused by flooding from the River Carron and coastal flooding (10035)		
<b>Delivery lead:</b>	Community		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Carronvale Residents and Tenants Association operates in this area. The group raises flooding issues and promotes flood resilience.		

<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 engage with the community and promote Floodline. This will be achieved through business liaison and SEPA led education events.</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>	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 (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>		

<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.		