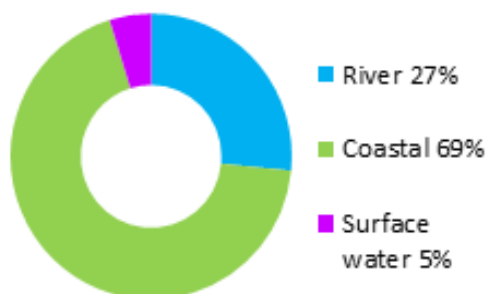


Stirling (Eastern Villages) (Potentially Vulnerable Area 09/09)

Local Plan District	Local authority	Main catchment
Forth	Falkirk Council, Stirling Council	Stirling coastal

Summary of flooding impacts



At risk of flooding

- 20 residential properties
- 10 non-residential properties
- £120,000 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

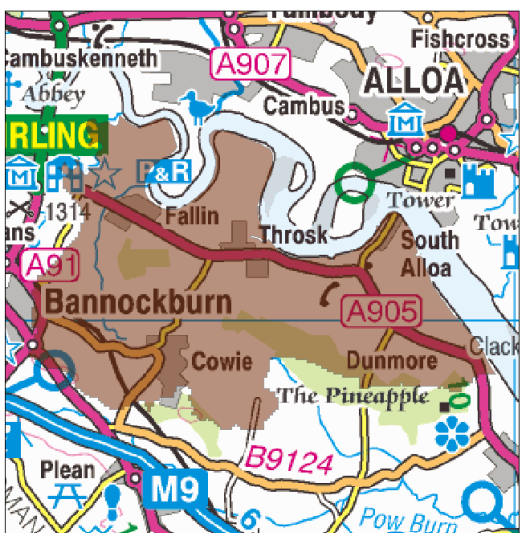
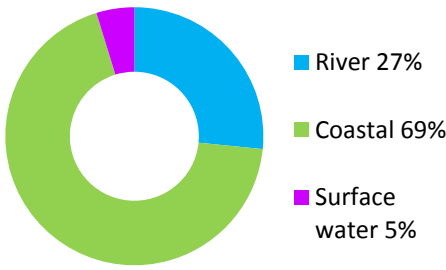
The actions below have been selected to manage flood risk.

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

Actions

Stirling (Eastern Villages) (Potentially Vulnerable Area 09/09)

Local Plan District	Local authority	Main catchment
Forth	Falkirk Council, Stirling Council	Stirling coastal

Background									
<p>This Potentially Vulnerable Area is 23km² and is part of the Stirling catchment (shown below). It lies along the south bank of the River Forth and includes the small urban areas of Fallin and South Alloa along with villages to the east of Stirling. The interaction between river and coastal flooding where the River Forth meets the Firth of Forth is an important factor in this area.</p>  <p>© Crown copyright. SEPA licence number 100016991 (2015). All rights reserved.</p>	<p>The area has a risk of river, coastal and surface water flooding. The majority of damages are caused by coastal flooding with smaller proportions caused by river and surface water flooding.</p> <p>There are approximately 20 residential properties and 10 non-residential properties at risk of flooding. The Annual Average Damages are approximately £120,000.</p>  <table border="1"> <caption>Data for Figure 1: Annual Average Damages by flood source</caption> <thead> <tr> <th>Flood Source</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>River</td> <td>27%</td> </tr> <tr> <td>Coastal</td> <td>69%</td> </tr> <tr> <td>Surface water</td> <td>5%</td> </tr> </tbody> </table> <p>Figure 1: Annual Average Damages by flood source</p>	Flood Source	Percentage	River	27%	Coastal	69%	Surface water	5%
Flood Source	Percentage								
River	27%								
Coastal	69%								
Surface water	5%								

Summary of flooding impacts

Small pockets of flood risk are spread across this area, notably near South Alloa, north east of Fallin and north of Cowie.

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.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 2,600)	10	20	30
Non-residential properties (total 240)	10	10	10
People	20	40	70
Community facilities	0	0	0
Utilities	<10	<10	<10
Transport links (excluding minor roads)	1 A road, 1 B road at 10 locations	1 A road, 1 B road at 10 locations	1 A road, 1 B road at 12 locations
Environmental designated areas (km ²)	0.2	0.2	0.2
Designated cultural heritage sites	3	3	3
Agricultural land (km ²)	1.2	1.3	1.4

Table 1: Summary of flooding impacts

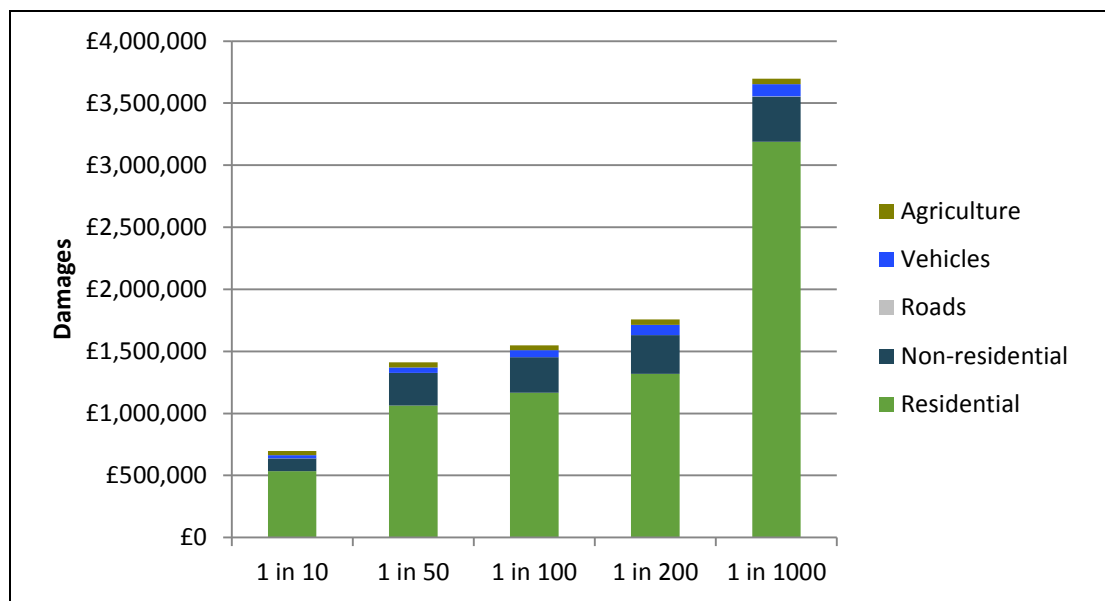


Figure 2: Damages by flood likelihood

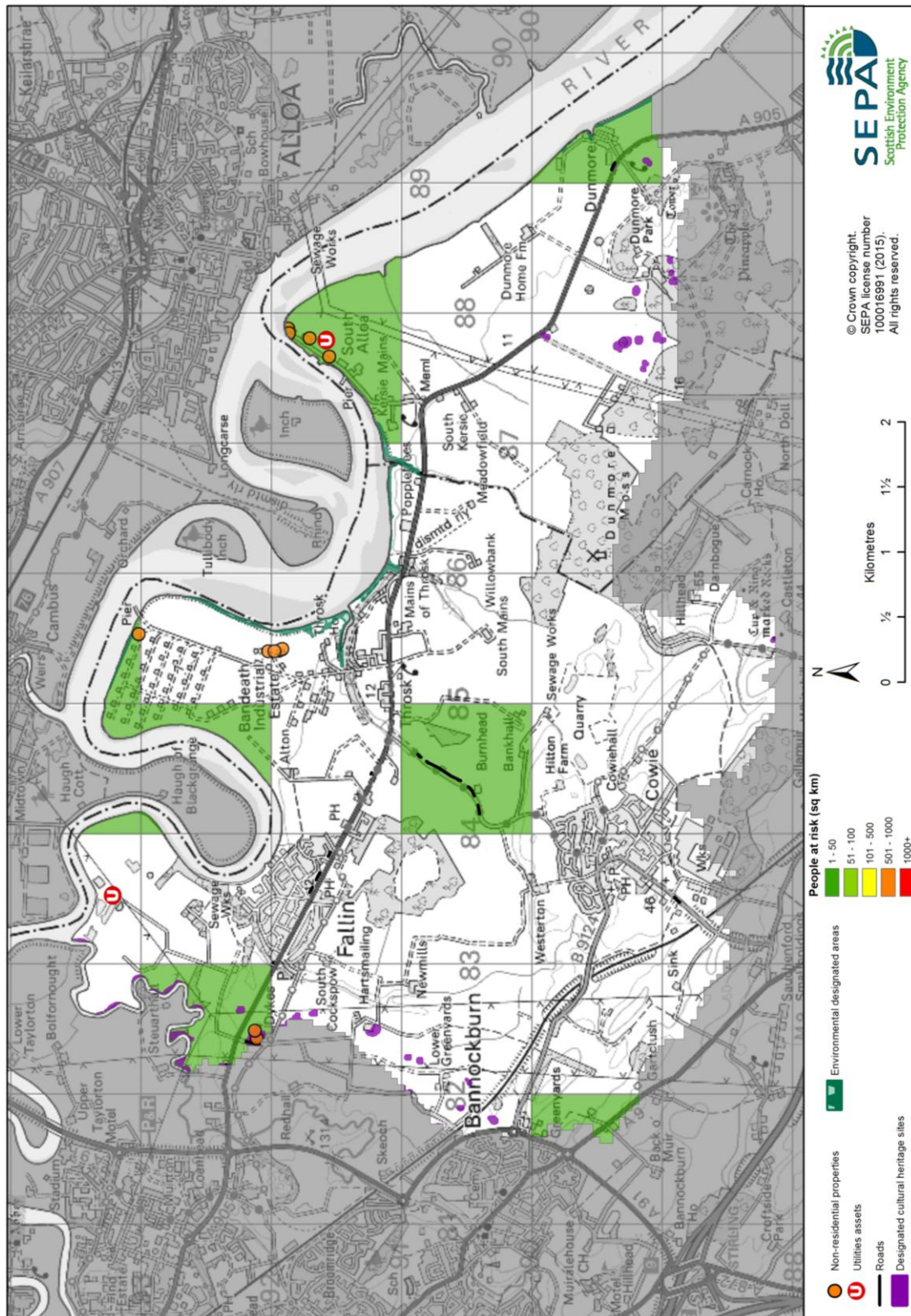


Figure 3: Impacts of flooding

History of flooding

No significant floods have been recorded in this area.

Objectives to manage flooding in Potentially Vulnerable Area 09/09

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 Stirling (Eastern Villages) Potentially Vulnerable Area.

Target area	Objective	ID	Indicators within PVA
Applies across Forth Local Plan District	Avoid an overall increase in flood risk	9001	<ul style="list-style-type: none"> • 20 residential properties • £120,000 Annual Average Damages
Applies across Forth Local Plan District	Reduce overall flood risk	9032	<ul style="list-style-type: none"> • 20 residential properties • £120,000 Annual Average Damages
Applies across Forth 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 09/09

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 Stirling (Eastern Villages) Potentially Vulnerable Area.

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

Action (ID):	STRATEGIC MAPPING AND MODELLING (90320016)		
Objective (ID):	Reduce overall flood risk (9032)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	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.		

Action (ID):	STRATEGIC MAPPING AND MODELLING (90320019)		
Objective (ID):	Reduce overall flood risk (9032)		
Delivery lead:	Scottish Water		
Status:	Not started	Indicative delivery:	2016-2021
Description:	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.		

Action (ID):	FLOOD FORECASTING (90320009)		
Objective (ID):	Reduce overall flood risk (9032)		
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 (90320011)		
Objective (ID):	Reduce overall flood risk (9032)		
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 (90320013)		
Objective (ID):	Reduce overall flood risk (9032)		
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 (90320007)		
Objective (ID):	Reduce overall flood risk (9032)		
Delivery lead:	Falkirk Council and Stirling 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 (90320014)		
Objective (ID):	Reduce overall flood risk (9032)		
Delivery lead:	Category 1 and 2 Responders		
Status:	Existing	Indicative delivery:	Ongoing
Description:	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.		

Action (ID):	PLANNING POLICIES (90010001)		
Objective (ID):	Avoid an overall increase in flood risk (9001) Reduce overall flood risk (9032)		
Delivery lead:	Planning authority		
Status:	Existing	Indicative delivery:	Ongoing
Description:	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.		