

## Kirkconnel (Potentially Vulnerable Area 14/01)

Local Plan District	Local authority	Main catchment
Solway	Dumfries and Galloway Council	River Nith

### Summary of flooding impacts



#### At risk of flooding

- 90 residential properties
- <10 non-residential properties
- £150,000 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>	<b>New flood warning</b>	<i>Community flood action groups</i>	<i>Property level protection scheme</i>	<i>Site protection plans</i>
<b>Flood protection study</b>	<i>Natural flood management study</i>	<i>Maintain flood warning</i>	<b>Awareness raising</b>	<i>Surface water plan/study</i>	<b>Emergency plans/response</b>
<b>Maintain flood protection scheme</b>	<b>Strategic mapping and modelling</b>	<b>Flood forecasting</b>	<b>Self help</b>	<b>Maintenance</b>	<b>Planning policies</b>

Actions

## Kirkconnel (Potentially Vulnerable Area 14/01)

Local Plan District	Local authority	Main catchment
Solway	Dumfries and Galloway Council	River Nith

### Background

This Potentially Vulnerable Area is located in the north of the Solway Local Plan District and is almost 10km<sup>2</sup>. It includes the town of Kirkconnel (shown opposite).

The area is at risk of river flooding, primarily from the River Nith. Ground water has also been known to affect properties and the road network within the area. There is a small risk of surface water flooding to areas surrounding Kirkconnel.

There are approximately 90 residential properties at risk of flooding. The Annual Average Damages are approximately £150,000 caused by river flooding.



### Summary of flooding impacts

River flooding is from the River Nith and three tributaries. The Grain Burn and Polbower Burn flow into the Nith from the north and the Kello Water has its confluence with the Nith to the south east of Kirkconnel. The Nith is one of the larger rivers in the Solway Local Plan District and has a shallow gradient as it flows through the area. The catchments of the Polbower Burn, Grain Burn and Kello Water are considerably smaller and have a steeper gradient.

The strategic assessment in this area shows that it is only subject to river flooding; however, historical records identify that groundwater flooding has also been experienced following the cessation of mining activity. The contribution of groundwater flooding has not been assessed in this report.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1. Residential properties within Kirkconnel are at risk of flooding from the River Nith, notably at St. Conal's Square and Riverside Terrace. The main road link at risk of flooding is the A76 to the north of Kelloholm.

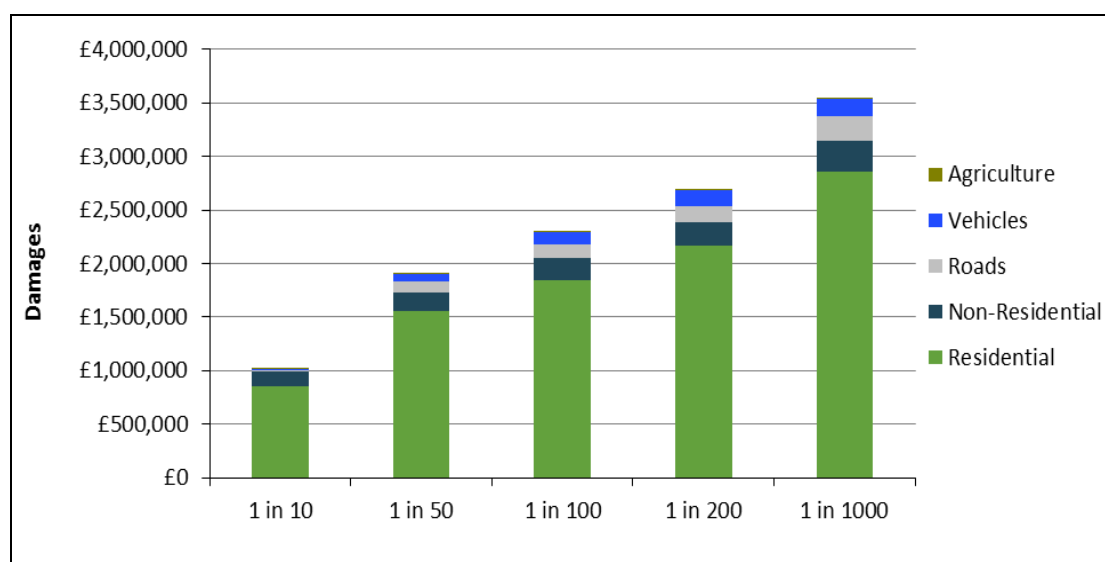
Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 90 to 110.

The damages associated with floods of different likelihood are shown in Figure 1. For this Potentially Vulnerable Area the highest damages are to residential properties.

The location of the impacts of flooding is shown in Figure 2.

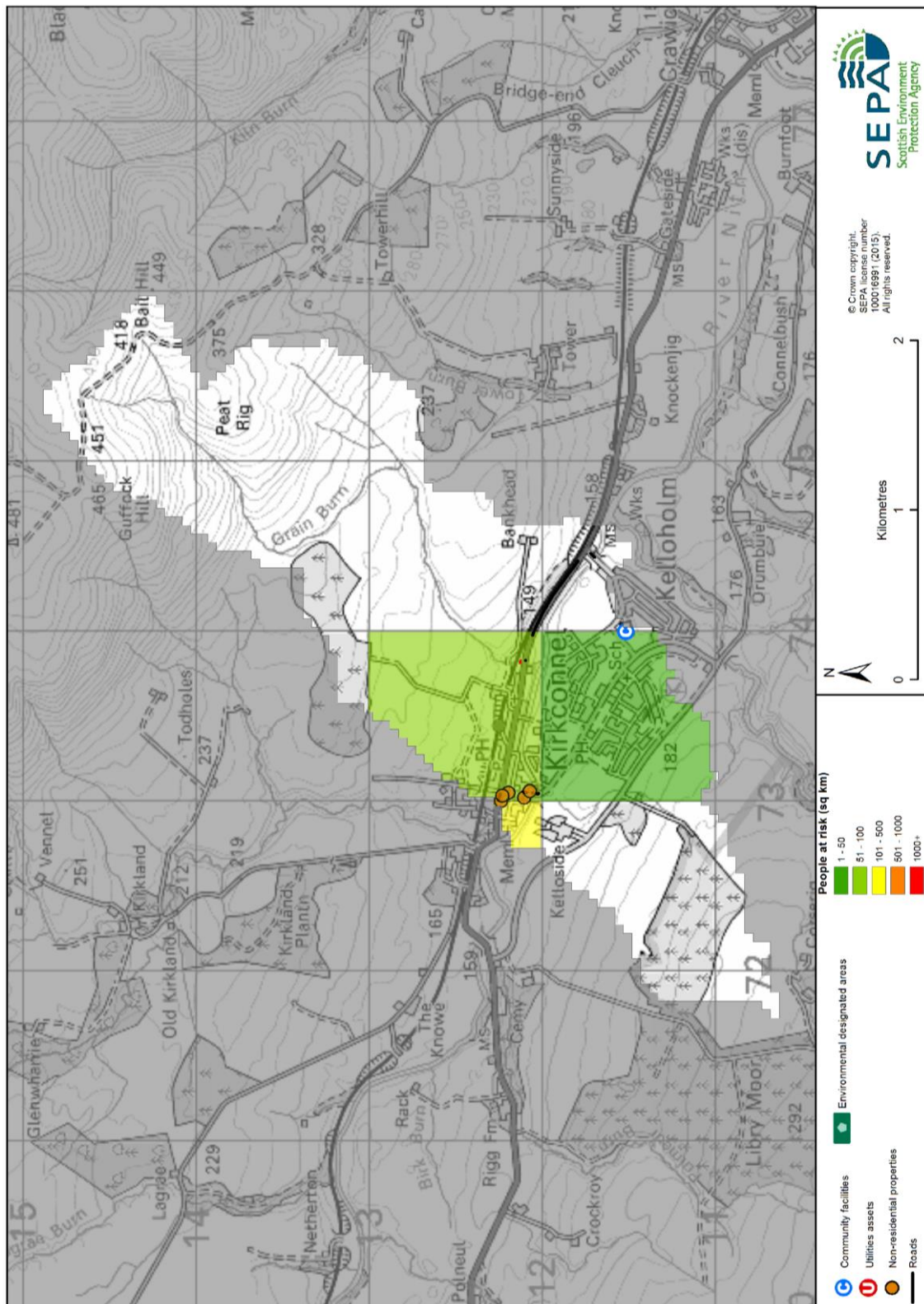
	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 710)	40	90	100
Non-residential properties (total 60)	<10	<10	<10
People	80	190	220
Community facilities	0	<10 Educational buildings	<10 Educational buildings
Utilities assets	0	0	0
Transport links - roads (km)	<0.1	0.6 (of which <0.1 is A road)	0.8 (of which <0.7 is A road)
Transport links - rail (km)	0	0	<0.1
Environmental designated areas (km <sup>2</sup> )	0	0	0
Designated cultural heritage sites	0	0	0
Agricultural land (km <sup>2</sup> )	0.1	0.2	0.2

**Table 1:** Summary of flooding impacts<sup>1</sup>



**Figure 1:** Damages by flood likelihood

<sup>1</sup> Some receptors are counted more than once if flooded from multiple sources



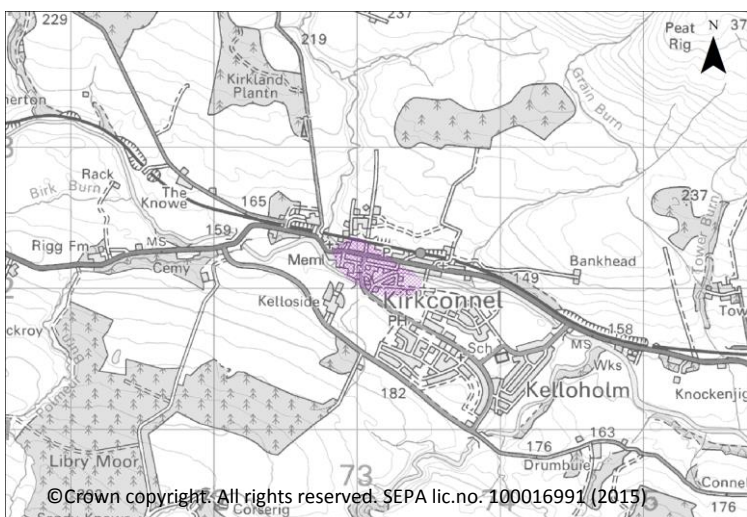
**Figure 2: Impacts of flooding**

### History of flooding

On 30 December 2013, prolonged heavy rain across Dumfries and Galloway caused the River Nith to burst its banks at Kirkconnel, resulting in more than 40 homes being evacuated and a local community facility on the north side of the Nith being flooded.

## Objectives to manage flooding in Potentially Vulnerable Area 14/01

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 Kirkconnel Potentially Vulnerable Area.

Reduce the risk of river flooding to properties in Kirkconnel	
Indicators:	Target area:
<ul style="list-style-type: none"> <li>90 residential properties</li> <li>&lt;10 non-residential properties</li> <li>£170,000 Annual Average Damages</li> </ul>	 <p style="font-size: small; text-align: center;">© Crown copyright. All rights reserved. SEPA lic.no. 100016991 (2015)</p>
Objective ID: 14001	

Target area	Objective	ID	Indicators within PVA
Applies across Solway Local Plan District	Avoid an overall increase in flood risk	14033	<ul style="list-style-type: none"> <li>90 residential properties</li> <li>£150,000 Annual Average Damages</li> </ul>
Applies across Solway Local Plan District	Reduce overall flood risk	14040	<ul style="list-style-type: none"> <li>90 residential properties</li> <li>£150,000 Annual Average Damages</li> </ul>
Applies across Solway 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 14/01

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 Kirkconnel Potentially Vulnerable Area.

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

<b>Action (ID):</b>	<b>NEW FLOOD WARNING (140010010)</b>		
<b>Objective (ID):</b>	Reduce the risk of river flooding to properties in Kirkconnel (14001)		
<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 Upper River Nith (from Kirkconnel downstream). Forecasting capability is currently under development in this area.		

<b>Action (ID):</b>	<b>FLOOD PROTECTION STUDY (140010005)</b>		
<b>Objective (ID):</b>	Reduce the risk of river flooding to properties in Kirkconnel (14001)		
<b>Delivery lead:</b>	Dumfries and Galloway Council		
<b>Priority:</b>	National:	Within local authority:	
	<b>72 of 168</b>	<b>7 of 10</b>	
<b>Status:</b>	<b>Ongoing</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	A flood protection study has been completed by Dumfries and Galloway Council, to assess flood risk within Kirkconnel and the feasibility of flood protection actions to mitigate the risk. The study also looked at the potential for natural flood management actions to reduce the impact of flooding, taking into account the proposed work from the New Cumnock pilot catchment study. The study also considered a localised property level protection		

	<p>schemes giving consideration of the achievable flood warning times for the upper River Nith.</p> <p>It is recommended that this study is reviewed to determine the current risk in the town and the potential future risk with climate change. This will determine if or when further work is required to investigate how to reduce the flood risk.</p>
<b>Potential impacts</b>	
<b>Economic:</b>	The flood protection study should consider how to reduce flood risk to 91 residential properties and 5 non-residential properties in this location, with potential damages avoided of up to £4.8 million.
<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 study area. There may be changes in visual amenity and land use as a result of this action.
<b>Environmental:</b>	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. This study is proposed for a number of rivers. The physical condition of part of the River Nith (water body ID 10611) is identified by SEPA to be at less than good status. Future works could improve the condition of the river or degrade it. Opportunities to improve the condition of the river should be considered by coordinating with river basin management planning. There are no international or national level environmental designations that are likely to be impacted by this action. Working in and around the channel may alter the river morphology and may increase erosion downstream of the action. There is likely to be a loss of semi-natural habitat in the footprint and vicinity of the defences.

<b>Action (ID):</b>	<b>STRATEGIC MAPPING AND MODELLING (140400016)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (14040)		
<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 River Nith area to improve understanding of 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 (140400019)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (14040)		
<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 (140010017)</b>		
<b>Objective (ID):</b>	Reduce the risk of river flooding to properties in Kirkconnel (14001)		
<b>Delivery lead:</b>	Dumfries and Galloway Council		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	Kirkconnel Flood Protection Scheme was constructed in 1984 on the Polbower Burn and consisted of the installation of a concrete channel, culvert and reinforcing gabions. The standard of protection is not known. Maintenance of this scheme should be continued. A flood protection study has been carried out by Dumfries and Galloway Council to look at further actions to reduce risk.		

<b>Action (ID):</b>	<b>FLOOD FORECASTING (140400009)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (14040)		
<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>SELF HELP (140400011)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (14040)		
<b>Delivery lead:</b>	—		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<p>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.</p> <p>Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.</p>		

<b>Action (ID):</b>	<b>AWARENESS RAISING (140400013)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (14040)		
<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>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.</p>		

<b>Action (ID):</b>	<b>MAINTENANCE (140400007)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (14040)		
<b>Delivery lead:</b>	Dumfries and Galloway 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 (140400014)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (14040)		
<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> <p>Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>		

<b>Action (ID):</b>	<b>PLANNING POLICIES (140330001)</b>		
<b>Objective (ID):</b>	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)		
<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.		