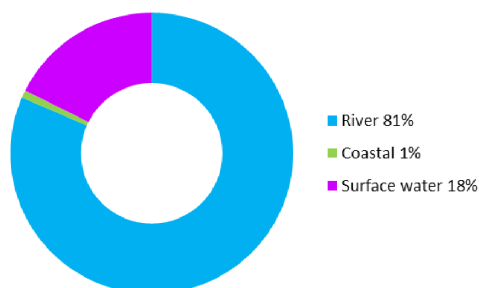


Conon Bridge and Muir of Ord (Potentially Vulnerable Area 01/16)

Local Plan District	Local authority	Main catchment
Highland and Argyll	The Highland Council	River Conon

Summary of flooding impacts



At risk of flooding

- 60 residential properties
- 10 non-residential properties
- £250,000 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>
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

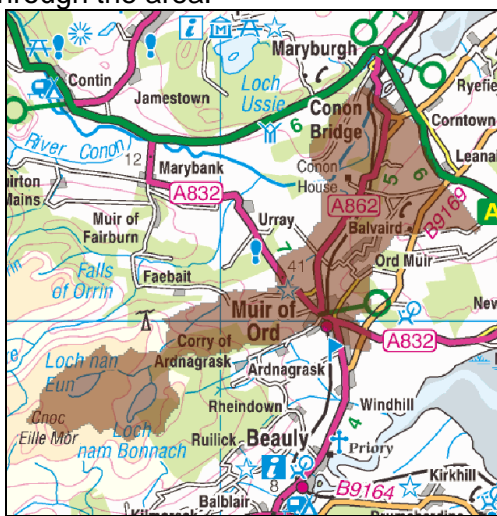
Conon Bridge and Muir of Ord (Potentially Vulnerable Area 01/16)

Local Plan District	Local authority	Main catchment
Highland and Argyll	The Highland Council	River Conon

Background

This Potentially Vulnerable Area is approximately 27km². It includes the Muir of Ord and Conon Bridge as well as adjacent mainly rural areas (shown below).

The A862, A832 and B9169 pass through the area.



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The River Conon is the largest river in the area. Conon Bridge benefits from a flood protection scheme which was constructed in 1990.

There are approximately 60 residential and 10 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £250,000 with the majority caused by river flooding.

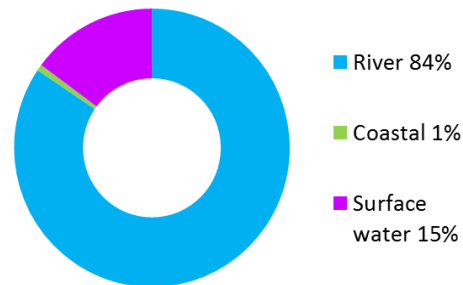


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Some parts of Conon Bridge remain at risk of river flooding (Eil Burn) and there is flood risk in Muir of Ord from Loch Ord. The outfall of Loch Ord however is via a culvert which has not been adequately modelled in the assessment of flood risk in this area. As a result it is likely that the number of properties at risk and the damages from river flooding are overestimated.

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.

Roads potentially affected by flooding include the A862, which links the communities between Beaully and Dingwall. The Wick to Inverness railway line is at a risk of flooding in several locations. Three designated cultural heritage and small areas of environmental importance are at risk. These include the Conon Islands Special Area of Conservation and Lower River Conon Site of Special Scientific Interest.

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.

	1 in 10	1 in 200	1 in 1000
	High likelihood	Medium likelihood	Low likelihood
Residential properties (total 1,800)	<10	60	130
Non-residential properties (total 190)	<10	10	30
People	10	120	290
Community facilities	0	0	0
Utilities assets	<10	10	10
Transport links (excluding minor roads)	Roads at 30 locations Rail at 20 locations	Roads at 50 locations Rail at 20 locations	Roads at 60 locations Rail at 20 locations
Environmental designated areas (km ²)	0.7	0.9	1
Designated cultural heritage sites	3	3	3
Agricultural land (km ²)	<1	1	1

Table 1: Summary of flooding impacts¹

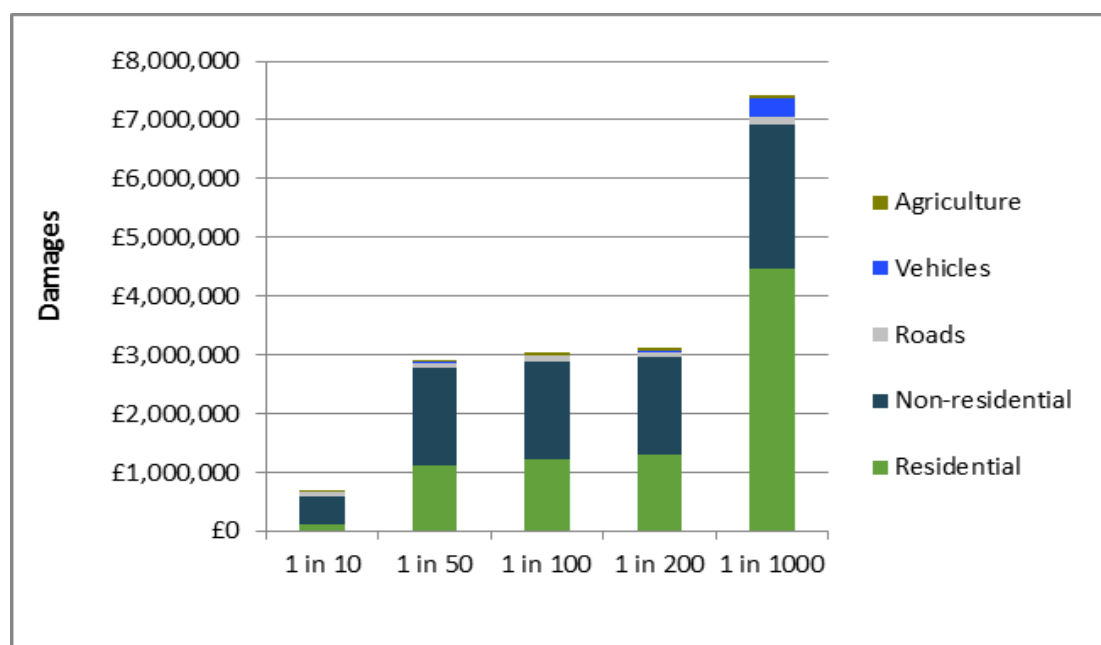


Figure 2: Damages by flood likelihood

¹ Some receptors are counted more than once if flooded from multiple sources

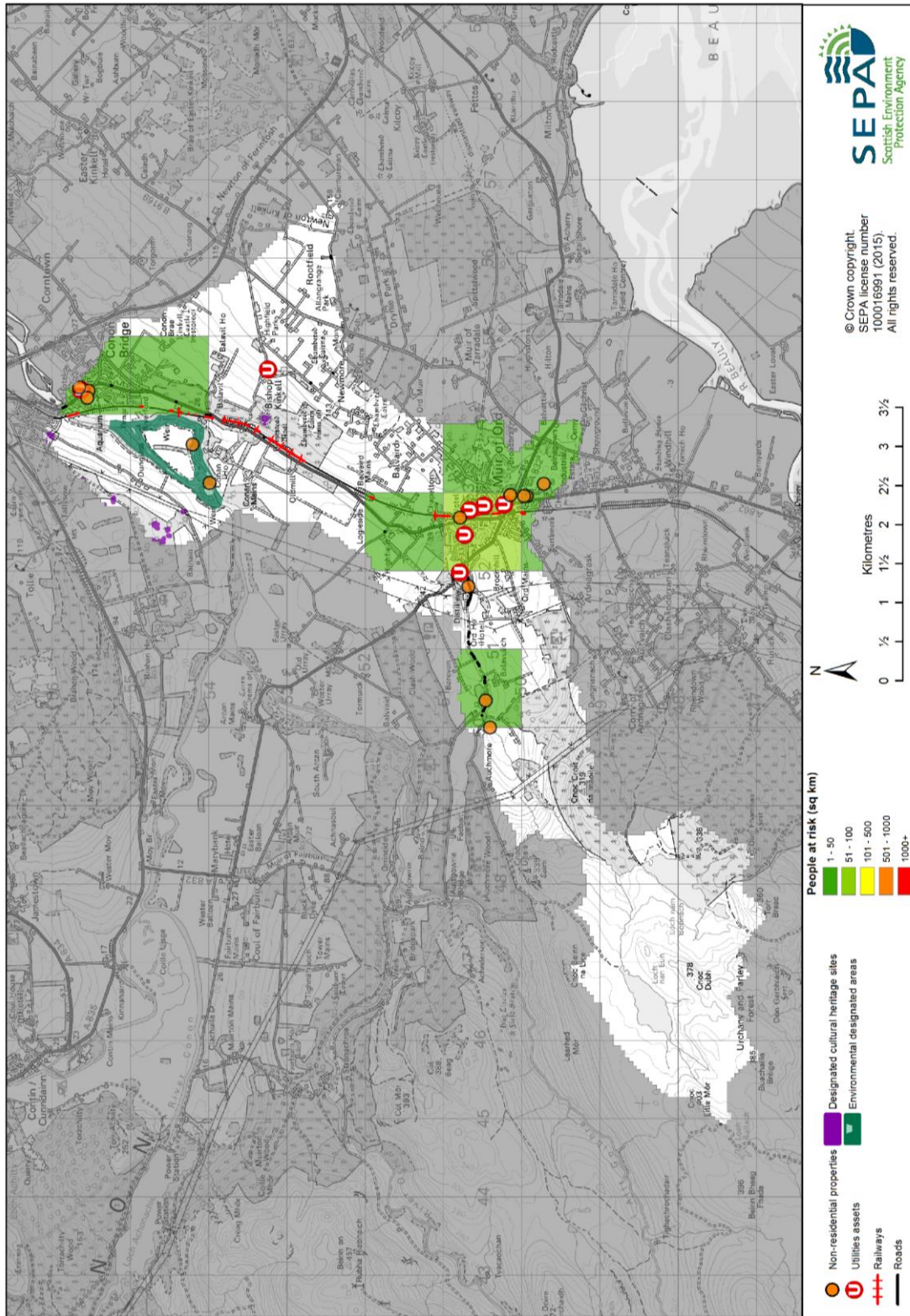


Figure 3: Impacts of flooding

History of flooding

The earliest recorded flood in this Potentially Vulnerable Area was in 1789 when the River Grudie caused severe flooding to buildings and farmland. Major flooding caused by the Conon occurred in 1829, 1849, 1852, 1892, 1903, 1962 and 1966. In more recent times, flooding occurred in 1983, 1984, 1989 due to embankment breaching, and in 1990, 2001 and 2002 from the Eil Burn.

Objectives to manage flooding in Potentially Vulnerable Area 01/16

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 Conon Bridge and Muir of Ord Potentially Vulnerable Area.

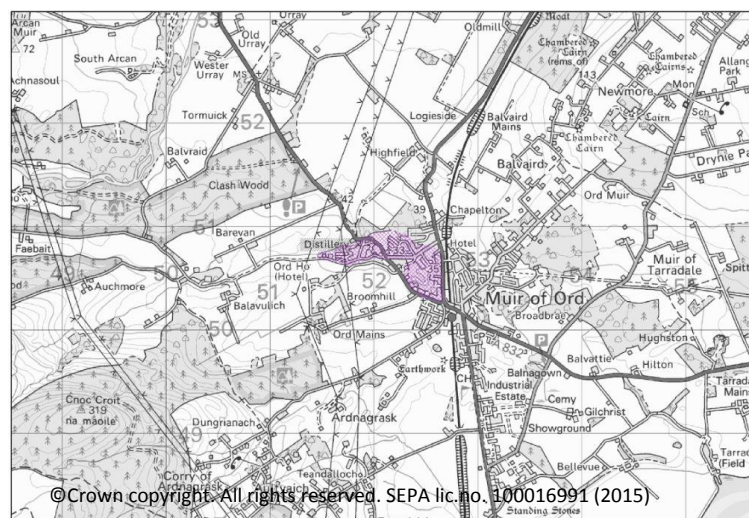
Reduce flood risk in Muir of Ord from the Allt Fionnaidh / Logie Burn and Ord Loch

Indicators:

- 50 people
- £61,000 Annual Average Damages from residential properties
- £140,000 Annual Average Damages from non-residential properties

Objective ID: 101601

Target area:



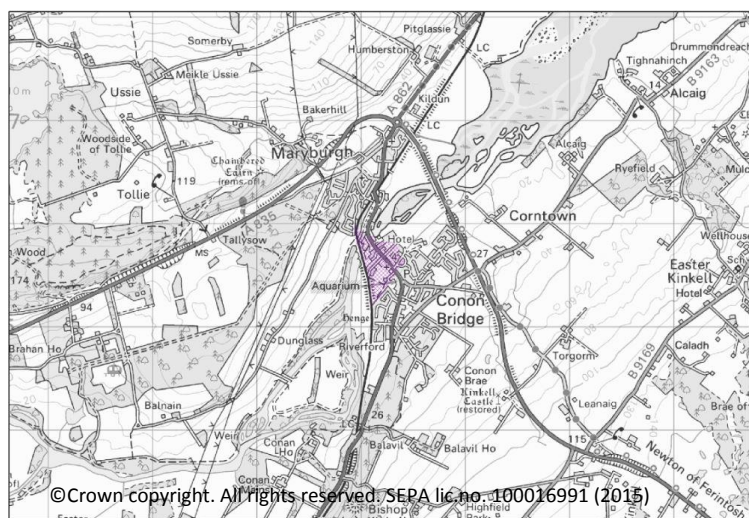
Maintain the River Conon Flood Protection Scheme in Conon Bridge and accept existing levels of flood risk from the River Conon and Eil Burn

Indicators:

- £9,100 Annual Average Damages from residential properties
- £2,200 Annual Average Damages from non-residential properties

Objective ID: 101602

Target area:



Target area	Objective	ID	Indicators within PVA
Applies across Highland and Argyll Local Plan District	Avoid an overall increase in flood risk	100001	<ul style="list-style-type: none"> • 60 residential properties • £250,000 Annual Average Damages
Applies across Highland and Argyll Local Plan District	Reduce overall flood risk	100002	<ul style="list-style-type: none"> • 60 residential properties • £250,000 Annual Average Damages
Applies across Highland and Argyll 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 01/16

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 Conon Bridge and Muir of Ord 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>
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

Action (ID):	FLOOD PROTECTION STUDY (1016010005)		
Objective (ID):	Reduce flood risk in Muir of Ord from the Allt Fionnaidh / Logie Burn and Ord Loch (101601)		
Delivery lead:	The Highland Council		
Priority:	National:		Within local authority:
	69 of 168		5 of 23
Status:	Not started	Indicative delivery:	2022-2027
Description:	A hydraulic study is required to further improve the understanding of flood risk in this area. Currently the flood risk for Muir of Ord is thought to be overestimated due to difficulties in modelling how the Ord Loch interacts with the surrounding watercourses. Improvements to the modelling are required to confirm the extent of flood risk in Muir of Ord and the surrounding rural areas. The improvements to the modelling should focus on Ord Loch and how it interacts with the surrounding watercourses. As a result of the overestimation of flood risk in the area, the study will be carried out in cycle 2.		
Potential impacts			
Economic:	The economic benefits will be confirmed once the hydraulic study has been carried out.		
Social:	The social benefits, including number of people at risk, will be confirmed once the hydraulic study has been carried out.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. There are no environmentally designated sites nearby which could be impacted by		

Environmental: future flood protection works.

Action (ID):	STRATEGIC MAPPING AND MODELLING (1000020016)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	SEPA will be seeking to incorporate additional surface water hazard mapping information into the flood maps to improve understanding of flood risk. Approximately 2,100km ² of improved data is currently available within this Local Plan District.		

Action (ID):	STRATEGIC MAPPING AND MODELLING (1000020019)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	Scottish Water		
Status:	Not started	Indicative delivery:	2016-2021
Description:	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.		

Action (ID):	MAINTAIN FLOOD PROTECTION SCHEME (1016020017)		
Objective (ID):	Maintain the River Conon Flood Protection Scheme in Conon Bridge and accept existing levels of flood risk from the River Conon and Eil Burn (101602)		
Delivery lead:	The Highland Council		
Status:	Existing	Indicative delivery:	Ongoing
Description:	The Conon Bridge Flood Prevention Scheme was completed in 1990 and extended after 2006 to provide a 1 in 100 year standard of protection. The scheme provides protection to the community at Conon Bridge from the River Conon and the Eil Burn. This should continue to be maintained to ensure the current protection level continues for properties in Conon Bridge.		

Action (ID):	FLOOD FORECASTING (1000020009)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	SEPA		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p> <p>The Potentially Vulnerable Area is within the 'Easter Ross and Great Glen' flood alert area.</p>		

Action (ID):	SELF HELP (1000020011)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	—		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<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>		

Action (ID):	AWARENESS RAISING (1000020013)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	Responsible authorities		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<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>		

Action (ID):	MAINTENANCE (1000020007)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	The Highland 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 (1000020014)		
Objective (ID):	Reduce overall flood risk (100002)		
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 (1000010001)		
Objective (ID):	Avoid an overall increase in flood risk (100001) Reduce overall flood risk (100002)		
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.		