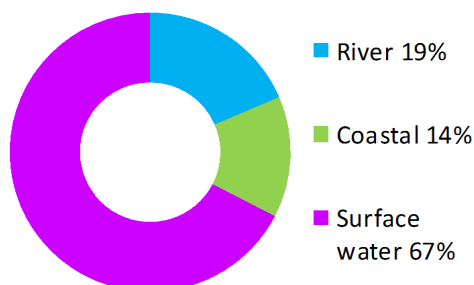


Dingwall and Strathpeffer (Potentially Vulnerable Area 01/14)

Local Plan District	Local authority	Main catchment
Highland and Argyll	The Highland Council	Cromarty coastal

Summary of flooding impacts



At risk of flooding

- 90 residential properties
- 90 non-residential properties
- £310,000 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>	New flood warning	<i>Community flood action groups</i>	<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

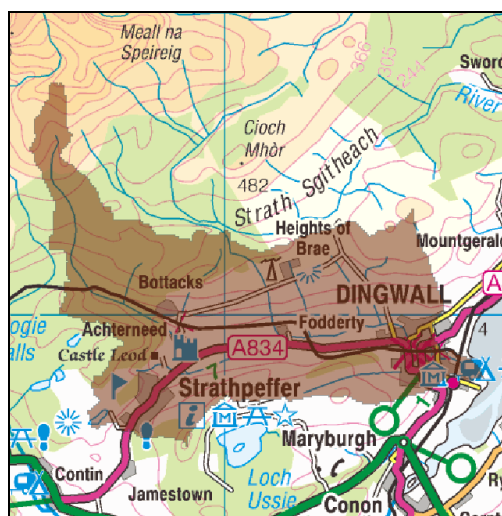
Actions

Dingwall and Strathpeffer (Potentially Vulnerable Area 01/14)

Local Plan District	Local authority	Main catchment
Highland and Argyll	The Highland Council	Cromarty coastal

Background

This Potentially Vulnerable Area is approximately 38km². It includes the towns of Dingwall and Strathpeffer as well as the surrounding rural area (shown below). The A834 and A862 pass through.



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The main river flowing through is the River Peffery.

There are approximately 90 residential and 90 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £310,000 with the majority caused by surface water flooding.

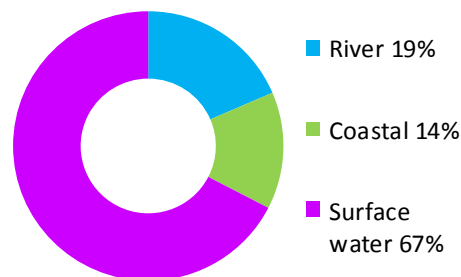


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Notable areas of surface water flood risk are in Dingwall, Blairninch and in Strathpeffer. River flood risk is primarily associated with the River Peffery again in Strathpeffer, Blairninch and Dingwall. There is coastal flood risk associated with the tidal section of the River Peffery and a further risk of coastal flooding in the southern parts of Dingwall to the east of the railway line, in the vicinity of the hospital and rifle range.

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. Two schools and a hospital are at risk of flooding. Roads at risk of flooding include the A834 (which links Dingwall with Ullapool and Kyle of Lochalsh) and the A862. The Wick to Inverness railway is at risk of flooding in several locations.

Four designated cultural heritage sites and a small area of the Cromarty Firth Special Protection Area and Site of Special Scientific Interest are also at risk.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to non-residential properties, followed by damages to 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 2,700)	50	90	130
Non-residential properties (total 620)	20	90	130
People	100	200	290
Community facilities	0	<10 Includes; educational buildings and healthcare facilities	<10 Includes; educational buildings, healthcare facilities and emergency services
Utilities assets	<10	10	10
Transport links (excluding minor roads)	Roads at 40 locations Rail at 20 locations	Roads at 80 locations Rail at 30 locations	Roads at 90 locations Rail at 30 locations
Environmental designated areas (km ²)	<0.1	<0.1	<0.1
Designated cultural heritage sites	4	4	4
Agricultural land (km ²)	1	1	2

Table 1: Summary of flooding impacts¹

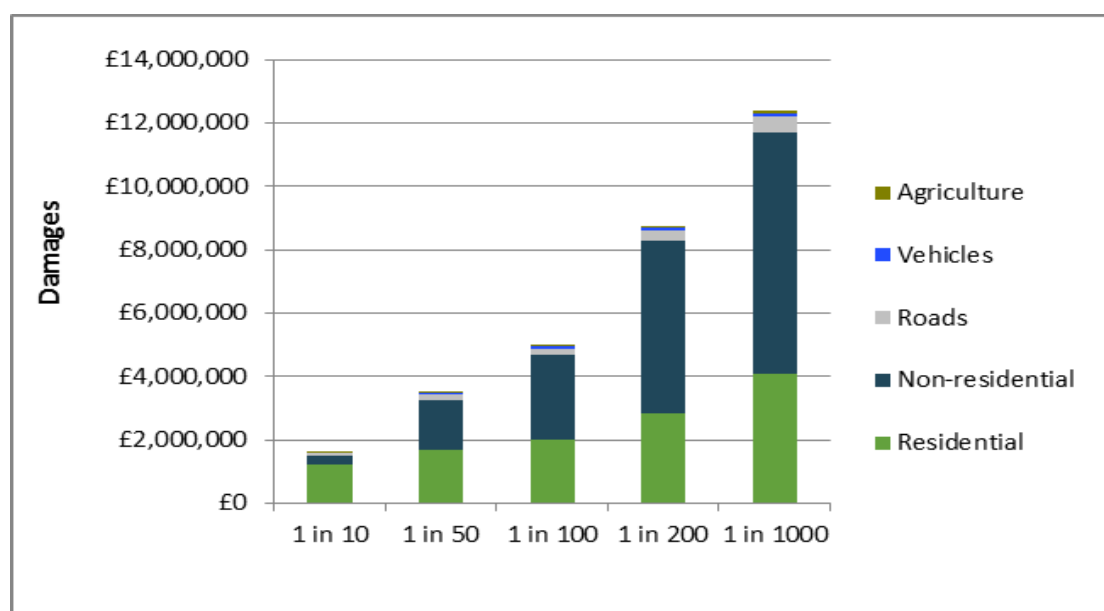


Figure 2: Damages by flood likelihood

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

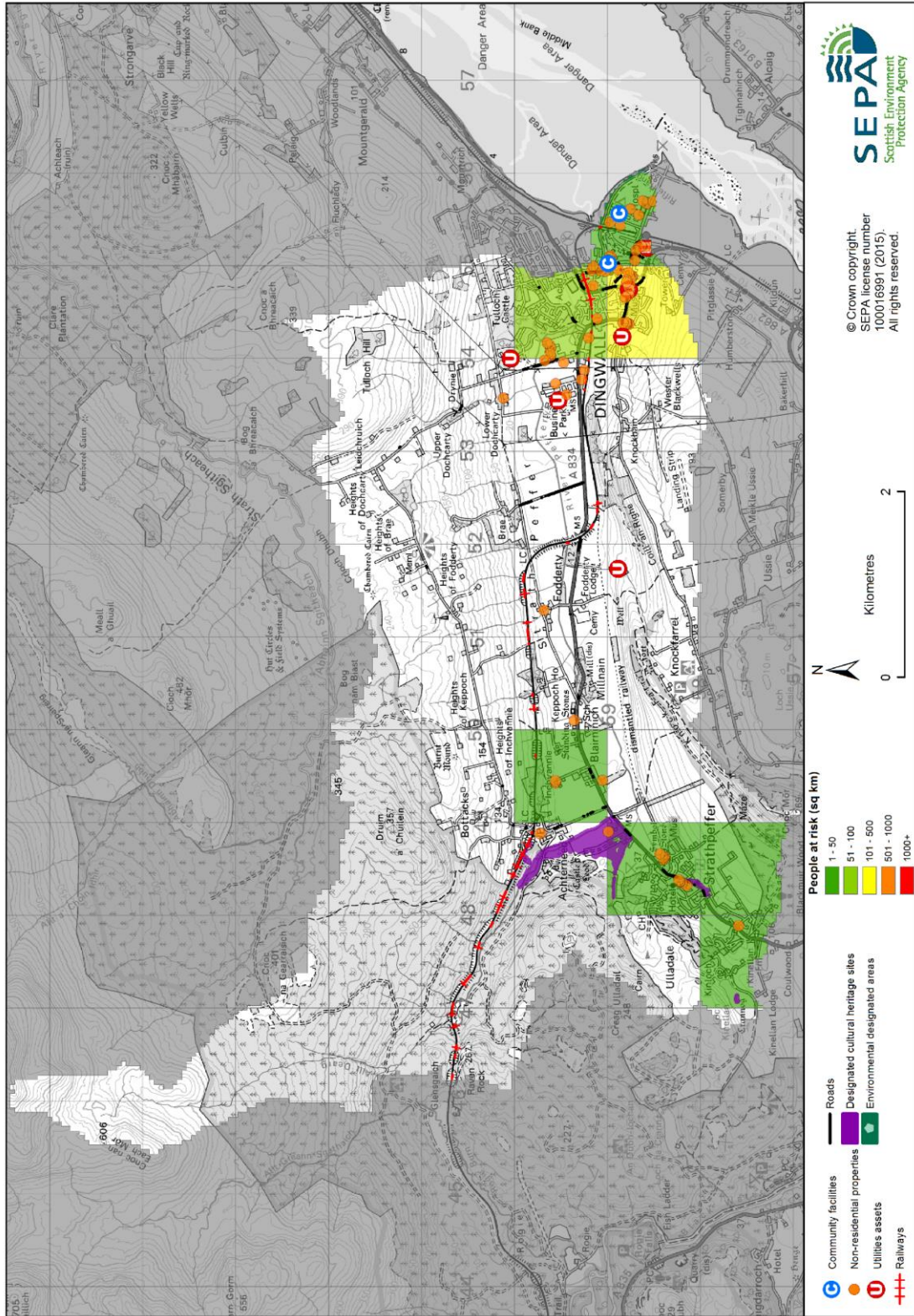


Figure 3: Impacts of flooding

History of flooding

Since 2001 there have been seven reported instances of flooding caused by surface water, river and groundwater. Properties on Burns Crescent have a history of flooding from the River Peffery. Recorded floods include:

- December 2013: the River Peffery overtopped in Strathpeffer;
- October 2012: the River Peffery overtopped and flooded properties along the A834 in Blairninich and Fodderty;
- October 2006: Significant flooding to property due to exceptionally heavy rainfall and the Knockbain Burn bursting its banks. The River Peffery was close to the underside of the bridge on Tulloch Street and there was a landslide on Mitchell Hill.
- November 2005: A road flooded due to capacity and blockage issues at culverts and the breaching of the river bank at a cattle access point;
- 1982: Flooding affecting properties, businesses and an electricity substation;
- 1947 and 1977: Flooding affecting properties and;
- 1895: A combined river and coastal flood affected roads and properties;
- 1829: The River Peffery overflowed its banks at Tulloch near Dingwall, and the Burn of Dingwall flooded the west end of the Burgh.

Objectives to manage flooding in Potentially Vulnerable Area 01/14

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 Dingwall and Strathpeffer Potentially Vulnerable Area.

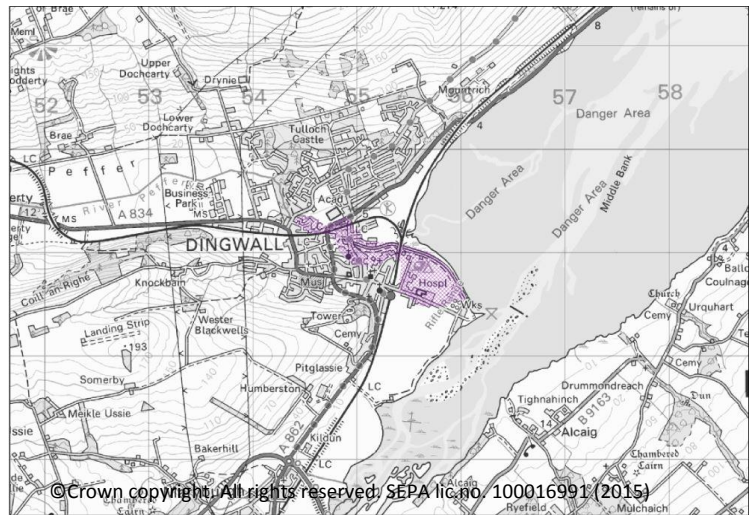
Reduce flood risk in Dingwall from the River Peffery

Indicators:

- 170 people
- £54,000 Annual Average Damages from residential properties
- £48,000 Annual Average Damages from non-residential properties
- 2 educational buildings

Objective ID: 101401

Target area:



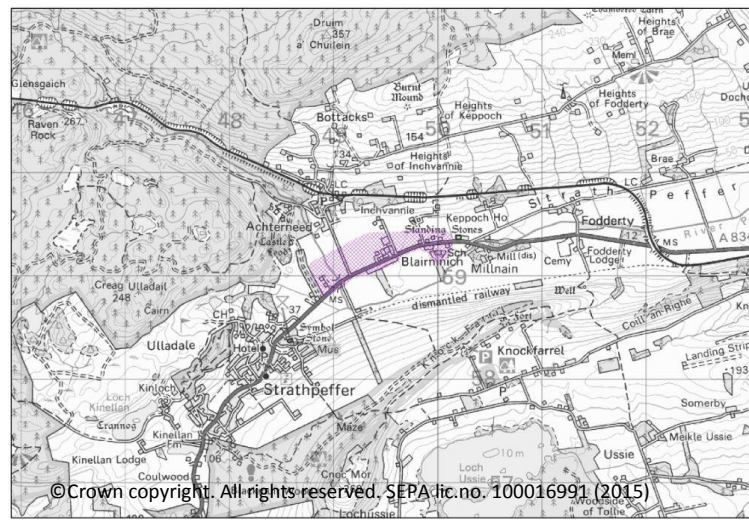
Reduce flood risk in Blairninch from the River Peffery

Indicators:

- 20 people
- £30,000 Annual Average Damages from residential properties

Objective ID: 101402

Target area:

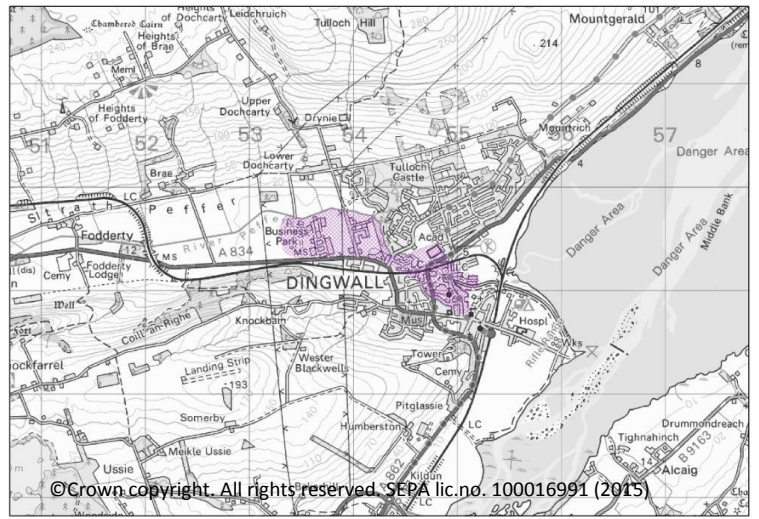


Reduce risk in Dingwall from coastal flooding

Indicators:

Target area:

- £2,700 Annual Average Damages from residential properties
- £36,000 Annual Average Damages from non-residential properties
- 1 educational building



Objective ID: 101403

Target area	Objective	ID	Indicators within PVA
Dingwall and Strathpeffer	Reduce risk from surface water flooding in Dingwall and Strathpeffer	101407	* See note below
Applies across Highland and Argyll Local Plan District	Avoid an overall increase in flood risk	100001	<ul style="list-style-type: none"> • 90 residential properties • £310,000 Annual Average Damages
Applies across Highland and Argyll Local Plan District	Reduce overall flood risk	100002	<ul style="list-style-type: none"> • 90 residential properties • £310,000 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.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 01/14 there are 60 residential properties at risk and Annual Average Damages of £210,000.

Actions to manage flooding in Potentially Vulnerable Area 01/14

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 Dingwall and Strathpeffer Potentially Vulnerable Area.

Selected actions					
<i>Flood protection scheme/works</i>	<i>Natural flood management works</i>	New flood warning	<i>Community flood action groups</i>	<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

Action (ID):	NEW FLOOD WARNING (1000020010)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	post 2021
Description:	The area under consideration includes properties in Dingwall affected by flooding from the River Peffery. Full scoping will be required before a flood warning service can be developed and implemented in this area and to determine appropriate timescales for delivery.		

Action (ID):	FLOOD PROTECTION STUDY (1014010005)		
Objective (ID):	Reduce risk in Dingwall from coastal flooding (101403) Reduce flood risk in Blairninich from the River Peffery (101402) Reduce flood risk in Dingwall from the River Peffery (101401)		
Delivery lead:	The Highland Council		
Priority:	National: 119 of 168	Within local authority: 11 of 23	
Status:	Ongoing	Indicative delivery:	2016-2021
Description:	The study will include flood risk from the River Peffery in Blairninich and Dingwall in addition to coastal flooding in the estuary of the River Peffery in Dingwall. It should primarily focus on direct defences (flood walls), natural flood management (including storage, runoff control,		

	river or floodplain restoration, sediment management) and consideration of property level protection for any residual risk. Other actions may also be considered in order to develop the most sustainable range of options.
Potential impacts	
Economic:	The study could benefit 61 residential and 28 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £3.3 million.
Social:	Approximately 134 people may directly benefit from flood protection works. Dingwall has a higher than average proportion of vulnerable residents. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. There are potential visual and access impacts for the community, reducing their connection to the watercourse. There may be benefits to roads (including A834 and A862) and the railway line, decreasing disruption to the wider community. In addition two utility sites (energy production/electricity) may also benefit. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for impacts on designated sites, habitats and changes to channel morphology which could affect the quality status of the river. There may also be impacts on sediment and fish populations and passage. There is potential to impact on the Dingwall conservation area and a cultural heritage site. 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 Cromarty Firth Special Protection Area. There may be impacts on the Cromarty Firth Site of Special Scientific Interest depending on how close to the shoreline the defences are located. The physical condition of the River Peffery (water body ID 20147) is identified by river basin management planning 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.

Action (ID):	SURFACE WATER PLAN/STUDY (1014070018)		
Objective (ID):	Reduce risk from surface water flooding in Dingwall and Strathpeffer (101407)		
Delivery lead:	The Highland Council		
Status:	Ongoing	Indicative delivery:	2016-2021
Description:	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.

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 review the 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 (1014010017)		
Objective (ID):	Reduce flood risk in Dingwall from the River Peffery (101401)		
Delivery lead:	The Highland Council		
Status:	Existing	Indicative delivery:	Ongoing
Description:	The Dingwall Flood Protection Scheme (existing flood embankments along the River Peffery in Dingwall) should be maintained to provide continued flood protection to Dingwall from the River Peffery including coastal flooding in the estuary of the River Peffery.		

Action (ID):	MAINTAIN FLOOD WARNING (1000020030)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	SEPA		
Status:	Existing	Indicative delivery:	Ongoing
Description:	Continue to maintain the 'Cromarty Firth' flood warning area which is part of the Moray Firth coastal flood warning scheme.		

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:	<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>The Highland Council has a flood monitor on the Knockbain Burn in Dingwall. The flood monitor provides early warning of increasing water depths, which could lead to flooding.</p>		

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.		