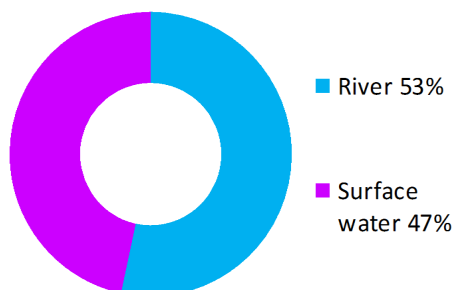


Inverurie and Kintore (Potentially Vulnerable Area 06/13)

Local Plan District	Local authority	Main catchment
North East	Aberdeenshire Council	River Don

Summary of flooding impacts



At risk of flooding

- 230 residential properties
- 190 non-residential properties
- £510,000 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.

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

Actions

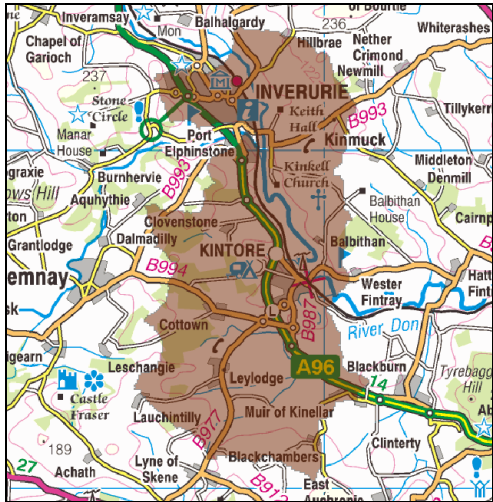
Inverurie and Kintore (Potentially Vulnerable Area 06/13)

Local Plan District	Local authority	Main catchment
North East	Aberdeenshire Council	River Don

Background

This Potentially Vulnerable Area includes Inverurie and Kintore. It is approximately 60km².

The A96 and the Aberdeen to Inverness railway pass through the area.

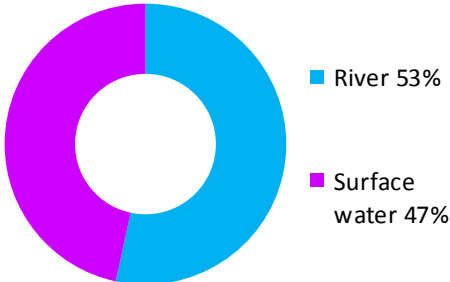


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The main watercourses are the River Don and the River Urie. There are several smaller watercourses including the Strath Burn which is mainly culverted through Inverurie.

There are approximately 230 residential and 190 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £510,000 with the majority caused by river flooding.



Flood Source	Percentage
River	53%
Surface water	47%

Figure 1: Annual Average Damages by flood source

Summary of impacts from all sources of flooding

River flood risk in Inverurie is concentrated at the southern end of the town at the confluence of the River Don and River Urie, with an additional flood risk area around the confluence of the Over Burn with the River Urie. The flood risk in Kintore is concentrated around the Loch Burn and the Tuach Burn.

Surface water flood risk in Inverurie is mainly associated with the culverted sections of the Strath Burn / Over Burn and is concentrated along the B9170.

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.

Several road locations, including the A96 and parts of the Aberdeen to Inverness railway line are at risk of flooding. Thirteen designated cultural heritage sites and an extensive area of agricultural land are also at risk of flooding.

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 and roads.

The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 6,800)	40	230	280
Non-residential properties (total 1,200)	100	190	240
People	80	500	610
Community facilities	0	0	<10 Emergency services
Utilities assets	<10	10	10
Transport links (excluding minor roads)	Roads at 120 locations Rail at 20 locations	Roads at 190 location Rail at 30 locations	Roads at 210 locations Rail at 30 locations
Environmental designated areas (km ²)	0	0	0
Designated cultural heritage sites	10	13	13
Agricultural land (km ²)	4	4	5

Table 1: Summary of flooding impacts¹

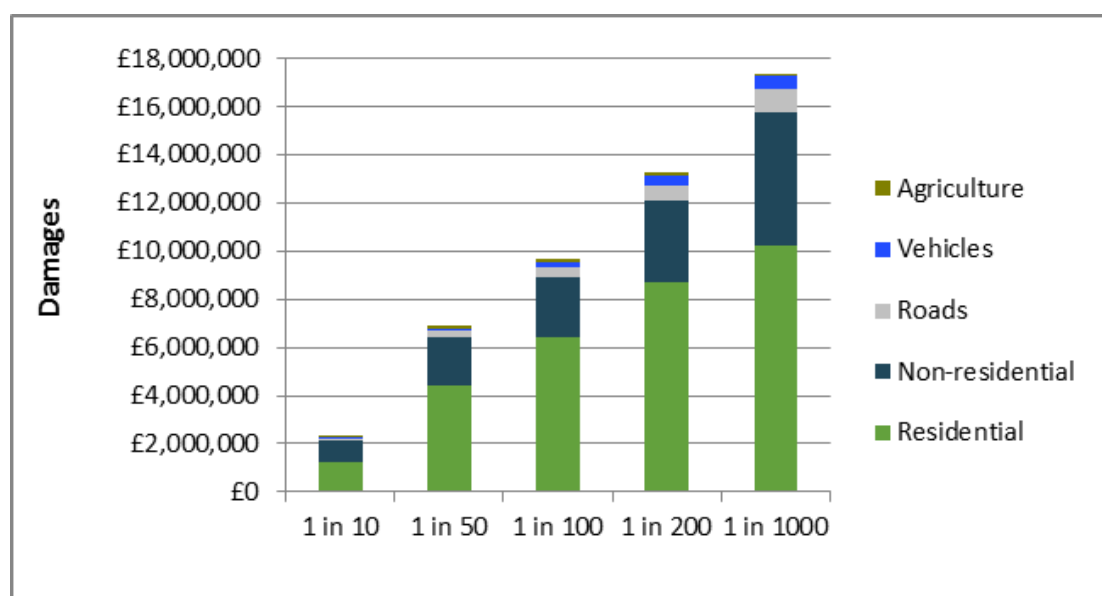


Figure 2: Damages by flood likelihood

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

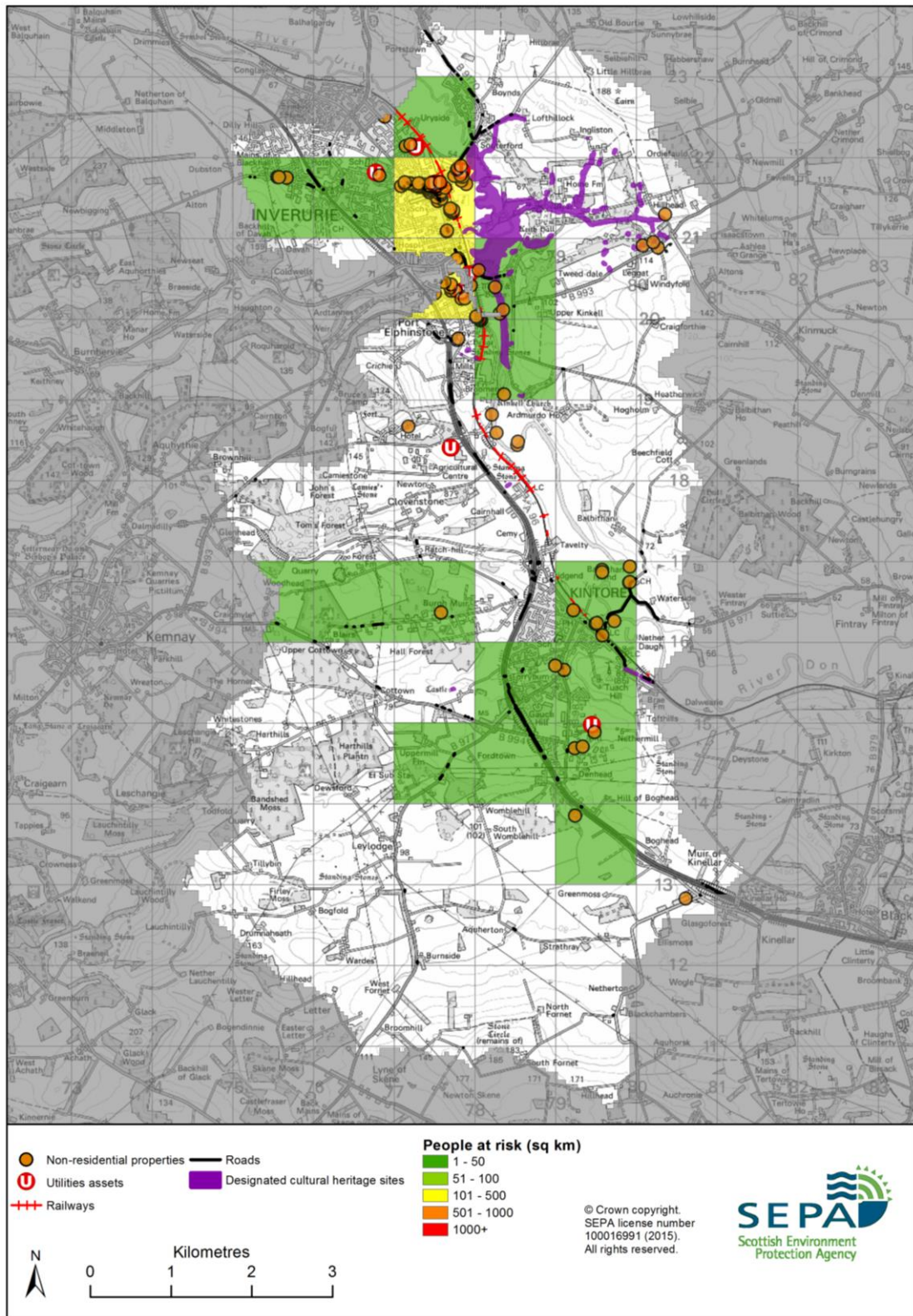


Figure 3: Impacts of flooding

History of flooding

The earliest recorded flood was in 1768 when flooding on the Don destroyed most of the agricultural crops in affected areas. Similar floods were recorded on the Don in 1828, 1838, 1872, 1903, 1905, 1928, 1948, and 1951. The River Don also caused flooding in 1995, 2002, 2003, 2004, and 2009.

The 2002 flood had the highest water level recorded at the Bridge of Don and flooding from the canal affected Canal Road. In 2003, the flood barrier at Keithhall Road, Inverurie was breached and residential properties were flooded.

The Gas Burn flooded Blackall Road in Inverurie in 1924. The Strath Burn caused flooding to properties in central Inverurie in 2002, 2005, 2006, 2008, 2009, and 2010 due to the culvert backing up and blockage of the trash screen.

In 2009 Oldmeldrum Road and Souterford Road flooded due to overtopping of the River Urie. Other floods in this location were recorded in 1995 and 2002.

There was flooding in Kintore from the Tuach Burn in 2002, 2003, 2006, and 2009, when water backed up the burn from the River Don. Properties in south east Kintore, including Kingsfield Road, were flooded. Water levels backing up from the River Don caused flooding on the Loch Burn in the eastern areas of Kintore in 2002, 2005, and 2009 affecting commercial property in the area between the two railway culverts and properties on Northern Road.

Objectives to manage flooding in Potentially Vulnerable Area 06/13

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 Inverurie and Kintore Potentially Vulnerable Area.

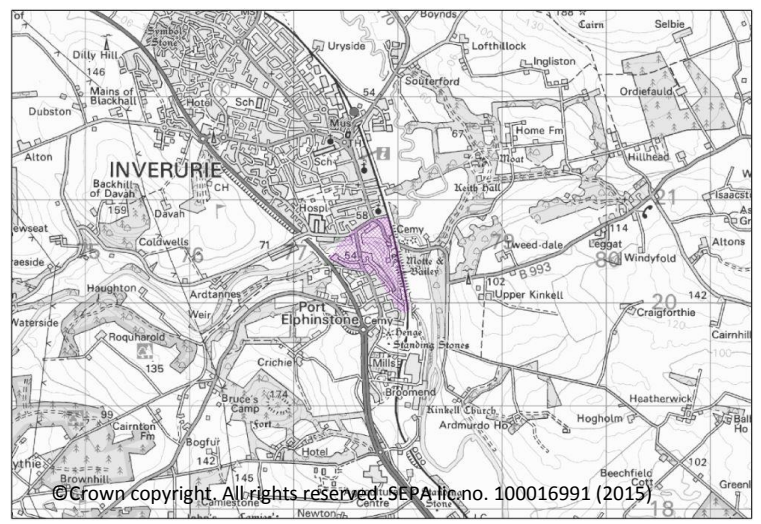
Reduce flood risk in Inverurie and Port Elphinstone from the River Don

Indicators:

- 240 people
- £120,000 Annual Average Damages from residential properties
- £84,000 Annual Average Damages from non-residential properties

Objective ID: 601301

Target area:



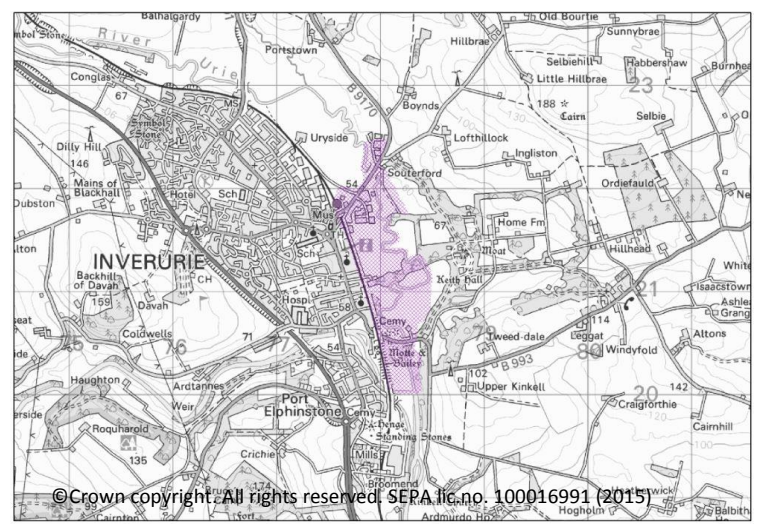
Reduce flood risk in Inverurie and Port Elphinstone from the River Urie

Indicators:

- 30 people
- £18,000 Annual Average Damages from residential properties
- £21,000 Annual Average Damages from non-residential properties

Objective ID: 601302

Target area:

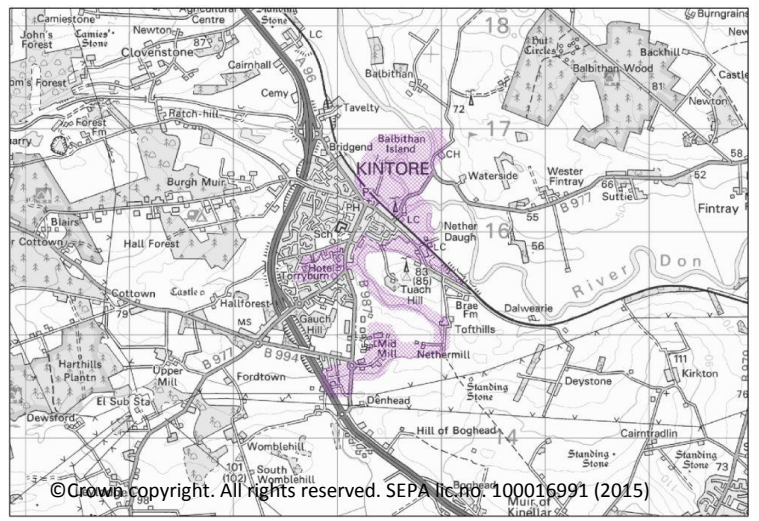


Reduce flood risk in Kintore from all watercourses (River Don, Torry Burn, Tuach Burn and Loch Burn)

Indicators:

Target area:

- 60 people
- £51,000 Annual Average Damages from residential properties
- £19,000 Annual Average Damages from non-residential properties
- B977



Objective ID: 601303

Target area	Objective	ID	Indicators within PVA
Inverurie and Kintore	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding	6301	• 23 locations on the A96 with a total length of 820m
Inverurie and Kintore	Reduce risk from surface water flooding in Inverurie and Kintore	601307	* See note below
Applies across North East Local Plan District	Avoid an overall increase in flood risk	600001	• 230 residential properties • £510,000 Annual Average Damages
Applies across North East Local Plan District	Reduce overall flood risk	600002	• 230 residential properties • £510,000 Annual Average Damages
Applies across North East 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 06/13 there are 90 residential properties at risk and Annual Average Damages of £240,000.

Actions to manage flooding in Potentially Vulnerable Area 06/13

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 Inverurie and Kintore Potentially Vulnerable Area.

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

Action (ID):	FLOOD PROTECTION SCHEME/WORKS (6301021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding (6301)		
Delivery lead:	Transport Scotland		
Status:	Not started	Indicative delivery:	2028-2033
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A96.		

Action (ID):	FLOOD PROTECTION STUDY (6013010005)		
Objective (ID):	Reduce flood risk in Inverurie and Port Elphinstone from the River Urie (601302) Reduce flood risk in Inverurie and Port Elphinstone from the River Don (601301)		
Delivery lead:	Aberdeenshire Council		
Priority:	National: 57 of 168	Within local authority: 2 of 12	
Status:	Not started	Indicative delivery:	2016-2021
Description:	A flood protection study is required to further develop previous work to consider flood protection works to reduce the risk of flooding in Inverurie and the Port Elphinstone from the River Don and River Urie. The study should cover flood risk from all watercourses in Inverurie and Port Elphinstone. The flood protection study should focus on		

	modifications to the bridges to improve conveyance, the construction of direct defences, online/offline storage, relocation of properties and property level protection to reduce the risk of flooding. Other actions may also be considered to develop the most sustainable range of options.
Potential impacts	
Economic:	The study could benefit 120 residential and 35 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £6.8 million.
Social:	The development of flood protection works following the study would potentially reduce risk to 264 people. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Three utility sites (energy/electricity sites), roads (including the B9170) and the railway line could benefit from flood protection works. 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. Opportunities to mitigate any environmental impacts may include design and timing of works. The flood protection study should consider how to avoid or minimise potential negative effects such as loss or disturbance of sediment, disruption to natural processes and loss of habitat. Six cultural heritage sites could benefit from the flood protection works identified in the study, however this will depend on the final location and extent of the works.

Action (ID):	FLOOD PROTECTION STUDY (6013030005)		
Objective (ID):	Reduce flood risk in Kintore from all watercourses (River Don, Torry Burn, Tuach Burn and Loch Burn) (601303)		
Delivery lead:	Aberdeenshire Council		
Priority:	National:		Within local authority:
	122 of 168		8 of 12
Status:	Not started	Indicative delivery:	2022-2027
Description:	A hydraulic study should be taken forward to assess the culverted sections of watercourses and the alignment of the watercourses. This will allow locations of risk to be confirmed within the modelling and against historic flood locations. The improved understanding of risk will increase the understanding of flood mechanisms and focus the area of further study, confirming the risk from all four watercourses; the River Don, Torry Burn, Tuach Burn and Loch Burn. The study should then progress to identify the most sustainable actions to manage flood risk.		
Potential impacts			
Economic:	The study could benefit 25 residential and 13 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £2.2 million. This value is likely to change during the initial stages of the study, as more information is gathered.		

Social:	There are currently an estimated 55 people at risk from floods, however this could change with further understanding of the existing flood risk. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. 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. Opportunities to mitigate any environmental impacts may include design and timing of works. The environmental impacts of potential actions will be considered when there is improved understanding of the current flood risk.

Action (ID):	SURFACE WATER PLAN/STUDY (6013070018)		
Objective (ID):	Reduce risk from surface water flooding in Inverurie and Kintore (601307)		
Delivery lead:	Aberdeenshire 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 (6000020016)		
Objective (ID):	Reduce overall flood risk (600002)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	SEPA will be seeking to develop the flood hazard mapping in the Upper Don area (from Pitcaple to Kintore) to improve understanding of the flood risk. The extent and timing of the completed improvements will be dependent on detailed scoping and data availability.		

Action (ID):	STRATEGIC MAPPING AND MODELLING (6000020019)		
Objective (ID):	Reduce overall flood risk (600002)		
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 WARNING (6000020030)		
Objective (ID):	Reduce overall flood risk (600002)		
Delivery lead:	SEPA		
Status:	Existing	Indicative delivery:	Ongoing
Description:	Continue to maintain the 'Inverurie' and 'Kintore' flood warning areas which are part of the Don river flood warning scheme.		

Action (ID):	FLOOD FORECASTING (6000020009)		
Objective (ID):	Reduce overall flood risk (600002)		
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 'Aberdeenshire and Aberdeen City' flood alert area.</p>		

Action (ID):	SELF HELP (6000020011)		
Objective (ID):	Reduce overall flood risk (600002)		
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> <p>Aberdeenshire Council provide a small range of flood protection products for individual property protection, which are available for all types of flooding, at cost price with free delivery across Aberdeenshire.</p>		

Action (ID):	AWARENESS RAISING (6000020013)		
Objective (ID):	Reduce overall flood risk (600002)		
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 communities and promote Floodline using most the appropriate mix of methods for the area. These could include direct mailings, education activities, participation in local events and relevant flooding messages in the media.</p> <p>Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>		

Action (ID):	MAINTENANCE (6000020007)		
Objective (ID):	Reduce overall flood risk (600002)		
Delivery lead:	Aberdeenshire Council, asset / land managers		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<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>		

Action (ID):	EMERGENCY PLANS/RESPONSE (6000020014)		
Objective (ID):	Reduce overall flood risk (600002)		
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>Aberdeenshire Council operates a water level sensor on the Strath Burn to provide early warning of potential flooding. Additional debris clearance on the trash screen is undertaken when water levels are high or weather forecasts suggest heightened risk of flooding.</p>		

Action (ID):	PLANNING POLICIES (6000010001)		
Objective (ID):	Avoid an overall increase in flood risk (600001) Reduce overall flood risk (600002)		
Delivery lead:	Planning authority		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p>		