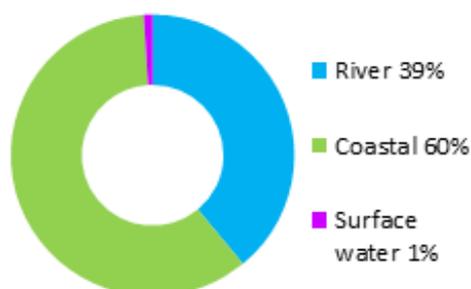


Berwickshire Coast (Potentially Vulnerable Area 10/26)

Local Plan District	Local authority	Main catchment
Forth Estuary	Scottish Borders Council	Berwickshire coastal

Summary of flooding impacts



At risk of flooding

- 70 residential properties
- 50 non-residential properties
- £300,000 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>	Community flood action groups	<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	<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

Berwickshire Coast (Potentially Vulnerable Area 10/26)

Local Plan District	Local authority	Main catchment
Forth Estuary	Scottish Borders Council	Berwickshire coastal

Background

This Potentially Vulnerable Area is 40km² and part of the East Lothian and Berwickshire catchment group (shown below). This is a small, coastal area covering part of Eyemouth, St Abb's Head and Coldingham. The main watercourses are the Eye Water, the Milldown Burn and the Dowlaw Burn. There are also a number of unnamed burns which also contribute to flooding.



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Coastal and river flood interaction occurs on the Eye Water with coastal flooding extending upstream for approximately 1.5km. The majority of flood damages in this Potentially Vulnerable Area are caused by coastal flooding.

There are approximately 70 residential properties and 50 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £300,000.

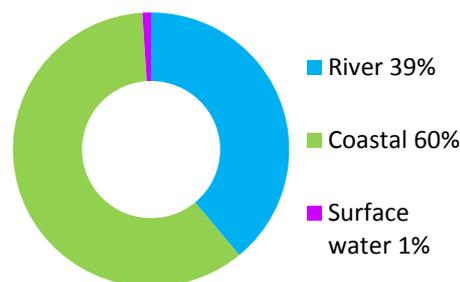


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The highest risk of coastal flooding is from the North Sea to Eyemouth. The highest risk of river flooding is from the Eye Water to Eyemouth.

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 non-residential properties followed by damages to 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 1,800)	60	70	80
Non-residential properties (total 400)	20	50	50
People	130	160	170
Community facilities	0	0	0
Utilities	<10	<10	<10
Transport links (excluding minor roads)	1 A road, 1 B road at 3 locations	1 A road, 1 B road at 4 locations	1 A road, 1 B road at 3 locations
Environmental designated areas (km ²)	0.8	0.8	0.8
Designated cultural heritage sites	6	6	6
Agricultural land (km ²)	0.1	0.1	0.1

Table 1: Summary of flooding impacts

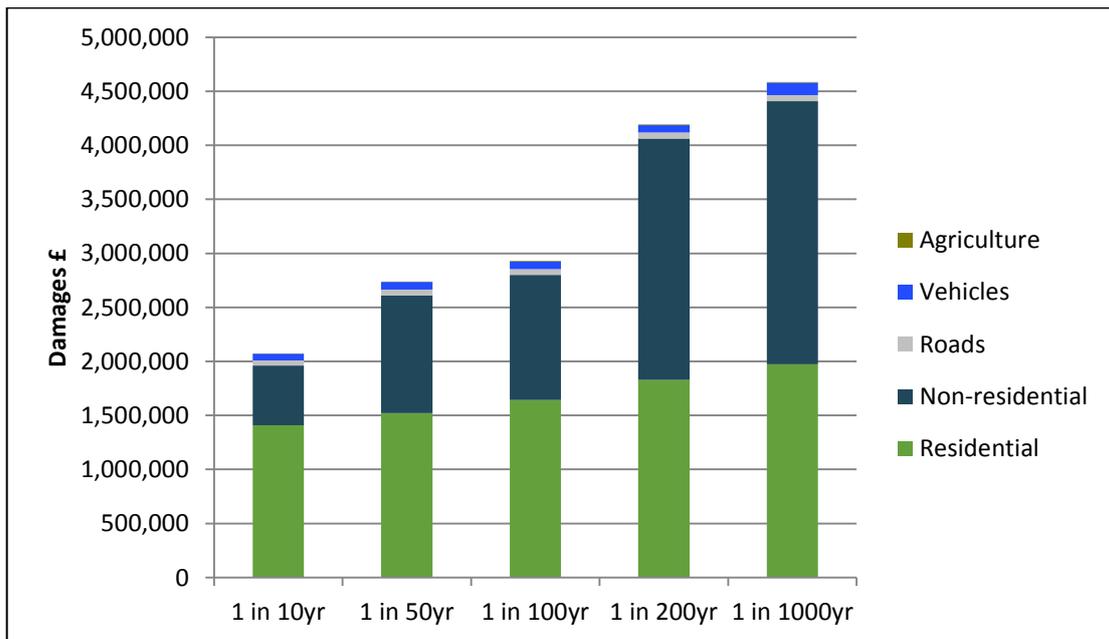


Figure 2: Damages by flood likelihood

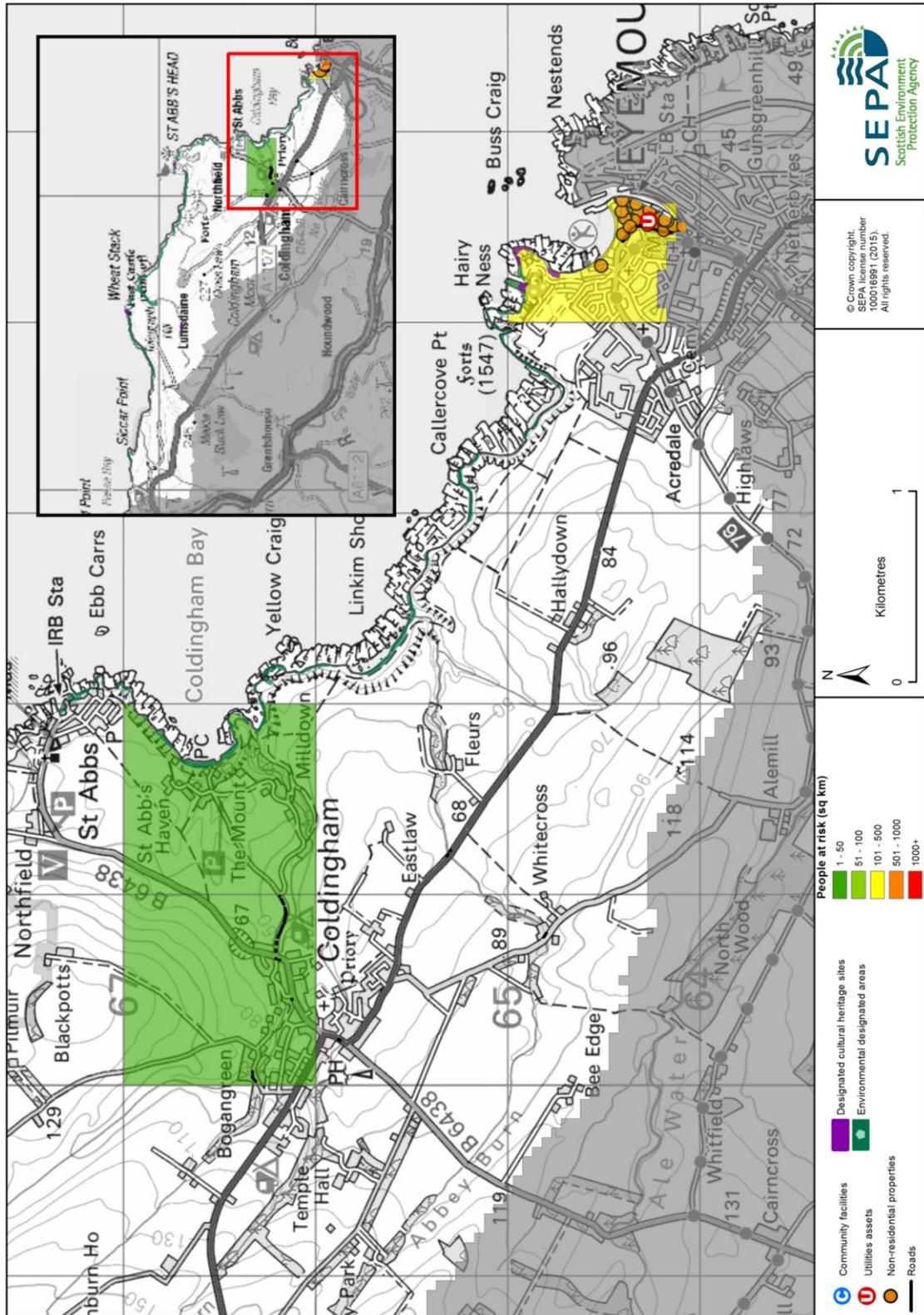


Figure 3: Impacts of flooding

History of flooding

This area has a long history of flooding. The following significant floods have been recorded:

- 4 January 2014: A tidal surge combined with a storm surge affected coastal areas across the east of Scotland, particularly around the Forth Estuary.
- 25 July 2013: Surface water flooding in Albert Road, Church Street and Harbour Road, Eyemouth resulted in both residential and commercial property being flooded.
- 5 December 2013: 1m North Sea surge combined with a high spring tide of 5.4m caused flooding along the east coast. Eyemouth was affected. Almost all of Harbour Road in Eyemouth was flooded but water inundated only 10 properties. This is less than would have been expected as a result of preventative actions taken by the local authority and property owners.
- 28 June 2012: Surface water flooding in Albert Road, Church Street and Harbour Road, Eyemouth resulted in both residential and commercial properties being flooded.
- 30 and 31 March 2010: A tidal surge coincided with highest mean tides of the year and caused extensive flooding along the east coast of Scotland, with the Firth of Forth being one of the worst affected areas. Locations within this coastal area affected include Leith, Musselburgh, Prestonpans, Port Seton, Dunbar, Eyemouth and North Berwick. Impacts included flooding of properties, damage to harbours, seawalls and roads.
- 7 January 2005: Combination of river and coastal flooding affected properties at Harbour Road and various other premises in Eyemouth.
- 22 October 2002: A storm caused combined river and coastal flooding in Eyemouth. Impacts included flooding of properties in Harbour Road and the High Street.
- 12 August 1948: A major flood on Eye Water resulted in water inundating Eyemouth and up to the second floor of some buildings. The harbour was completely awash and houses were evacuated. Seven railway bridges and two road bridges were washed away. Multiple buildings were flooded. The railway was destroyed with long term restrictions on travel. This is thought to have been greater than a 1 in 200 year flood event in Eyemouth.
- 1881: The 'Eyemouth Disaster' resulted in 191 fishermen drowning.

Objectives to manage flooding in Potentially Vulnerable Area 10/26

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 the Berwickshire Coast Potentially Vulnerable Area.

Reduce economic damages to residential and non-residential properties in Eyemouth caused by coastal flooding	
Indicators:	Target area:
<ul style="list-style-type: none"> • £89,000 Annual Average Damages from residential properties • £45,000 Annual Average Damages from non-residential properties 	
Objective ID: 10084	

Target area	Objective	ID	Indicators within PVA
Applies across Forth Estuary Local Plan District	Avoid an overall increase in flood risk	10001	<ul style="list-style-type: none"> • 70 residential properties • £300,000 Annual Average Damages
Applies across Forth Estuary Local Plan District	Reduce overall flood risk	10099	<ul style="list-style-type: none"> • 70 residential properties • £300,000 Annual Average Damages
Applies across Forth Estuary 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 10/26 there are <10 residential properties at risk and Annual Average Damages of £3,400.

Actions to manage flooding in Potentially Vulnerable Area 10/26

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 the Berwickshire Coast Potentially Vulnerable Area.

Selected actions					
<i>Flood protection scheme/works</i>	<i>Natural flood management works</i>	<i>New flood warning</i>	Community flood action groups	<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	<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):	FLOOD PROTECTION STUDY (100840005)		
Objective (ID):	Reduce economic damages to residential and non-residential properties in Eyemouth caused by coastal flooding (10084)		
Delivery lead:	Scottish Borders Council		
Priority:	National:		Within local authority:
	66 of 168		4 of 6
Status:	Not started	Indicative delivery:	2016-2021
Description:	A flood protection study has been recommended for Eyemouth to assess whether flood defences, sediment management and natural flood management could reduce flood risk. The study should also consider the viability of property level protection. Natural flood management options that should be considered include wave attenuation. The study should be carried out in conjunction with the Shoreline Management Plan (2016-2018). The study should take a sustainable approach and consider the interaction between actions and potential effects on coastal processes along the shoreline.		
Potential impacts			
Economic:	The study could benefit 34 residential properties and 21 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £5.7 million.		
Social:	Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the		

Environmental:	environment and designated sites. Where possible opportunities to enhance and restore the environment should be sought, for example through natural flood management. 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 Berwickshire and North Northumberland Coast Special Area of Conservation. Conservation areas, listed buildings and designated bathing waters are also present in the study area and could be positively or negatively impacted.
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Action (ID):	STRATEGIC MAPPING AND MODELLING (100990016)		
Objective (ID):	Reduce overall flood risk (10099)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	SEPA will work with the local authority to review the existing study data and establish any further work required to enable an update of the flood maps in the Eyemouth coastal area. SEPA will support the local authority if further work beyond a strategic scale is required.		

Action (ID):	STRATEGIC MAPPING AND MODELLING (100990019)		
Objective (ID):	Reduce overall flood risk (10099)		
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 WARNING (100990030)		
Objective (ID):	Reduce overall flood risk (10099)		
Delivery lead:	SEPA		
Status:	Existing	Indicative delivery:	Ongoing
Description:	Continue to maintain the Grantshouse to Eyemouth flood warning area which is part of the Eye river flood warning scheme. Continue to maintain the Eyemouth Coastal flood warning area which is part of the Firth of Forth and Tay coastal flood warning scheme.		

Action (ID):	FLOOD FORECASTING (100990009)		
Objective (ID):	Reduce overall flood risk (10099)		
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):	COMMUNITY FLOOD ACTION GROUPS (100840012)		
Objective (ID):	Reduce economic damages to residential and non-residential properties in Eyemouth caused by coastal flooding (10084)		
Delivery lead:	Community		
Status:	Existing	Indicative delivery:	Ongoing
Description:	Eyemouth Resilient Community Group and the St Abbs Resilient Community Group operate in this area. The groups could help increase community resilience to flooding.		

Action (ID):	SELF HELP (100990011)		
Objective (ID):	Reduce overall flood risk (10099)		
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. Scottish Borders Council offers discounted flood protection products to homes and businesses at risk in the Scottish Borders.		

Action (ID):	AWARENESS RAISING (100990013)		
Objective (ID):	Reduce overall flood risk (10099)		
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 (100990007)		
Objective (ID):	Reduce overall flood risk (10099)		
Delivery lead:	Scottish Borders 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 (100990014)		
Objective (ID):	Reduce overall flood risk (10099)		
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>		

Action (ID):	PLANNING POLICIES (100010001)		
Objective (ID):	Avoid an overall increase in flood risk (10001) Reduce overall flood risk (10099)		
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.		