

Flood Risk Management Strategy

Forth Estuary Local Plan District

This section is the most relevant for individuals, communities and businesses seeking to understand their local flood risk and its management. There is an overview of the Local Plan District, as well as further detail for every Potentially Vulnerable Area. For each Potentially Vulnerable Area, there is a short description of the causes and consequences of flooding. The agreed objectives are clearly set out and, most importantly, the actions that will deliver these objectives are prioritised and described.

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2.1 Summary of flooding in the Forth Estuary Local Plan District

The Forth Estuary Local Plan District covers an area of 3,256km² with a population of approximately 1.4 million. It contains 13 local authorities, 27 Potentially Vulnerable Areas and 2 candidate Potentially Vulnerable Areas.

Flood risk in the Forth Estuary

There are approximately 14,000 residential and 3,800 non-residential properties at risk of flooding within the Local Plan District. This equates to approximately 16% of all properties at risk of flooding nationally. Within the Local Plan District, approximately 2% of all residential and 6% of all non-residential properties are at risk and it is estimated that 95% of these properties are located within Potentially Vulnerable Areas or candidate Potentially Vulnerable Areas. The Annual Average Damages from flooding (see glossary) are approximately £36 million.

River flooding is the main source of flood risk, followed by surface water flooding. The Annual Average Damages caused by river flooding are £18 million, those caused by surface water flooding are £12 million and those caused by coastal flooding are £5.5 million (Figure 1).

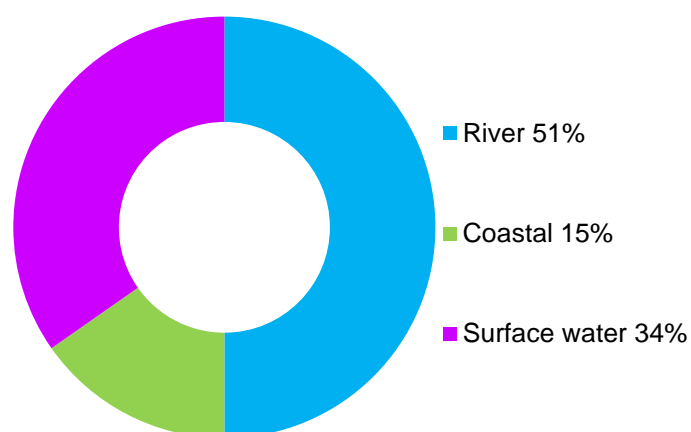


Figure 1: Annual Average Damages by flood source

Table 1 and Figure 3 show the number of properties at risk and the Annual Average Damages caused by flooding in the main towns and cities within the Local Plan District. This includes damages to residential properties, non-residential properties, transport and agriculture. Please note that economic damages to airports and rail infrastructure were not assessed, as information on damages at this scale is not available.

	Residential and non-residential properties at risk of flooding	Annual Average Damages
Edinburgh	6,600	£8.5 million
Musselburgh	1,800	£3.8 million
Grangemouth	810	£940,000
Carron-Carronshore-Bainsford	640	£930,000
Dunfermline	420	£1.2 million
Haddington	370	£700,000
Linlithgow	330	£860,000
Leven-Methil	300	£850,000
Falkirk	300	£400,000
Livingston	290	£380,000

Table 1: Main areas at risk of flooding

Background information on the Forth Estuary Local Plan District

The extent of the Forth Estuary Local Plan District and the location of the Potentially Vulnerable Areas are shown in Figure 2. It includes the urban areas of Edinburgh, Livingston, Cumbernauld, Falkirk, Dunfermline, Kirkcaldy and Glenrothes.

The main river catchments include the River Leven, River Carron, River Avon, River Almond, Water of Leith, River Esk, River Tyne and the Eye Water. The largest lochs include the Carron Valley and Loch Coulter reservoirs that are in the River Carron catchment. Other lochs include Loch Leven in the River Leven catchment, Cobbinshaw Reservoir in the River Almond catchment, and Harperrig, Threipmuir and Harlaw Reservoirs in the Water of Leith catchment.

The Forth Estuary Local Plan District includes part of the central belt that is heavily urbanised. Rural areas are located in the north of the Forth of Forth, in East Lothian and along the Berwickshire coast in the Scottish Borders. Across the area the main types of land cover include heather and grassland (37%), arable and horticultural land (35%), and coniferous and broadleaved woodland (13%). Urban areas represent approximately 10% of total land cover.

The Local Plan District has 375km of coastline that includes the Firth of Forth and the Berwickshire coast. The Firth of Forth is the largest estuary on the east coast of Scotland. It extends 95km from Stirling in the west, where the River Forth flows into the estuary, to Fife Ness in the east where it meets the North Sea.

Further details of flood risk from distinct sources can be found in the river, coastal and surface water sections.

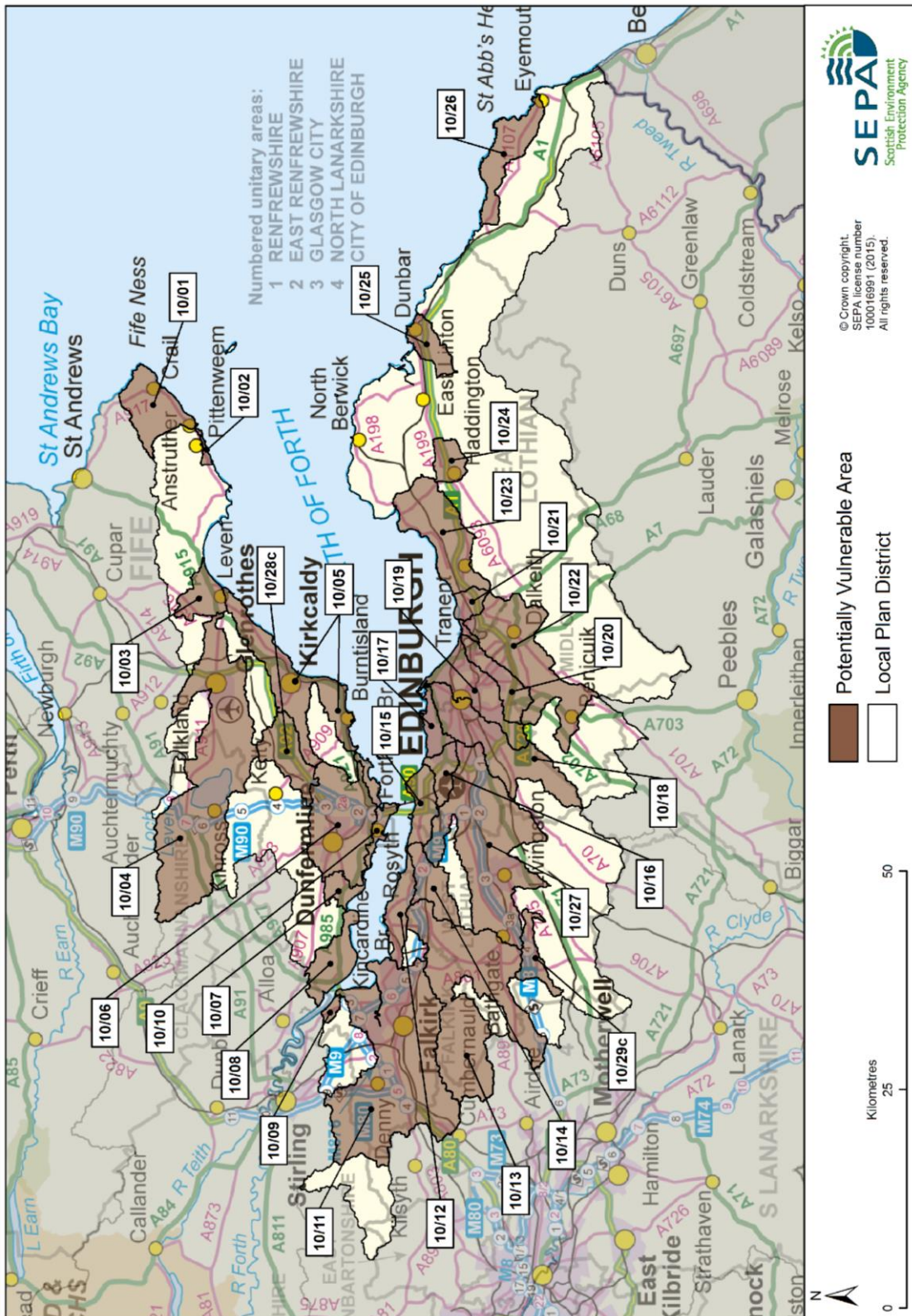


Figure 2: The Forth Estuary Local Plan District with Potentially Vulnerable Areas identified

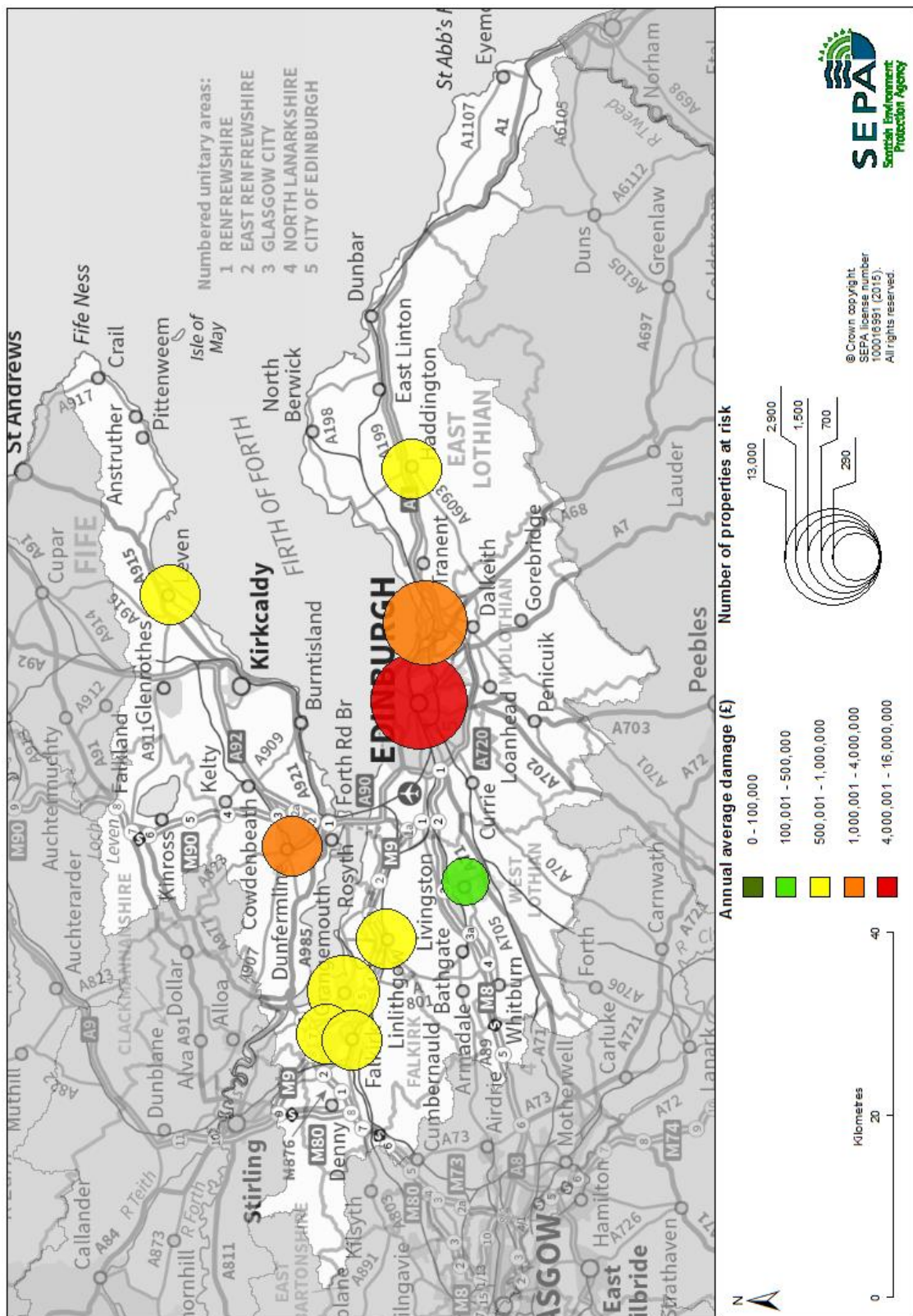


Figure 3: The Forth Estuary Local Plan District showing areas with most properties at risk of flooding and associated damages

Objectives and actions in the Forth Estuary Local Plan District

The objectives are the shared aims for managing flooding. Actions describe where and how flood risk will be managed. Objectives and actions have been set by SEPA and agreed by flood risk management responsible authorities following consultation.

Some flood risk management objectives and actions apply to all areas, whether designated as a Potentially Vulnerable Area or not. For example, flood risk can be managed through national planning policy or as part of ongoing statutory duties for local authorities. The focus of this Flood Risk Management Strategy is to manage flood risk in Potentially Vulnerable Areas where specific actions apply in addition to the generic actions listed below. Further detail on specific actions can be found in the relevant Potentially Vulnerable Area chapter. Local authorities may have further information on how they manage flooding across their area.

Target area	Objective(s)	ID	Indicators
Applies across Forth Estuary Local Plan District	Avoid an overall increase in flood risk	10001	<ul style="list-style-type: none"> • 14,000 residential properties • 3,800 non-residential properties • 31,000 people
Applies across Forth Estuary Local Plan District	Reduce overall flood risk	10099	<ul style="list-style-type: none"> • 14,000 residential properties • 3,800 non-residential properties • 31,000 people

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):	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 the Resilient Communities Initiative, and ensuring that properties and businesses are insured against flood damage.		

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>Local authorities will be undertaking additional awareness raising activities, further details will be set out in the Local FRM Plans.</p>		

Action (ID):	MAINTENANCE (100990007)		
Objective (ID):	Reduce overall flood risk (10099)		
Delivery lead:	Local authority, 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. The local authorities 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.		

2.2 Potentially Vulnerable Areas

The table below summarises the actions to manage flood risk in the Potentially Vulnerable Areas of this Local Plan District. Further detail is provided in each Potentially Vulnerable Area.

PVA	Flood protection scheme/ works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning*	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/ response	Planning policies
10/01							✓	N/A	✓	✓			✓	✓	✓		✓	✓
10/02							✓	N/A	✓	✓			✓	✓	✓		✓	✓
10/03			✓	✓		✓	✓	N/A	✓	✓			✓	✓	✓		✓	✓
10/04	✓		✓	✓		✓	✓	✓	N/A	✓		✓	✓	✓	✓		✓	✓
10/05	✓			✓		✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
10/06				✓		✓	✓	✓	N/A	✓			✓	✓	✓		✓	✓
10/07				✓	✓	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
10/08	✓			✓			✓	✓	✓	✓			✓	✓	✓		✓	✓
10/09			✓	✓			✓	N/A	N/A	✓			✓	✓	✓		✓	✓
10/10						✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
10/11	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓
10/12						✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
10/13				✓	✓	✓	✓	✓	N/A	✓			✓	✓	✓		✓	✓
10/14							✓	N/A	N/A	✓			✓	✓	✓		✓	✓
10/15							✓	N/A	N/A	✓			✓	✓	✓		✓	✓
10/16						✓	✓	N/A	✓	✓			✓	✓	✓		✓	✓
10/17				✓		✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
10/18	✓					✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
10/19						✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
10/20				✓		✓	✓	✓	N/A	✓			✓	✓	✓		✓	✓
10/21	✓				✓	✓	✓	N/A	✓	✓		✓	✓	✓	✓		✓	✓
10/22	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓
10/23				✓			✓	✓	✓	✓		✓	✓	✓	✓		✓	✓
10/24	✓						✓	N/A	✓	✓		✓	✓	✓	✓		✓	✓
10/25				✓			✓	N/A	✓	✓		✓	✓	✓	✓		✓	✓
10/26				✓			✓	N/A	✓	✓		✓	✓	✓	✓		✓	✓
10/27	✓			✓		✓	✓	✓	N/A	✓		✓	✓	✓	✓	✓	✓	✓
10/28c			✓	✓		✓		N/A	N/A	✓			✓	✓	✓		✓	✓
10/29c				✓				N/A	N/A	✓			✓	✓	✓		✓	✓

*Note: N/A is used where there is no formal Flood Protection Scheme or flood warning scheme present.