

# Local Flood Risk Management Plan Cycle 2

2022-2028

## Forth Estuary Local Plan District



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**Midlothian Council**

**North Lanarkshire Council**

**Perth & Kinross Council**

**Scottish Borders Council**

**SEPA**

**Scottish Flood Forum**

**South Lanarkshire Council**

**Stirling Council**

**Scottish Water**

**The City of Edinburgh Council**

**West Lothian Council**

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## Section 1: Flood Risk Management in the Forth Local Plan District

### 1.1 What Is A Local Flood Risk Management Plan?

Flood Risk Management Plans are Scotland's route map for reducing the effects of flooding on our communities. This is key to health, well-being, and economic success. They are also important in our response to the climate emergency as flooding is increasing due to climate change.

The Local Flood Risk Management Plan (the Plan) for the Forth Estuary has been designed to ensure effort to reduce flood risk in this catchment area is coordinated. This is achieved by working in partnership with all organisations responsible for flood risk management and the plan focuses the work of these organisations to where the risk of flooding and benefits of action are greatest. The roles and responsibilities of some of the key organisations involved are set out later in the plan.

The Plan sets out *how* and *when* actions to reduce the impact of flooding in the Forth Estuary (LPD) identified in the Suite of National Flood Risk Management Plan will be delivered. The Plan identifies where the risk of flooding and benefit of investment is greatest and says how and when actions will be delivered. Flood Risk Management Plans are delivered over six-year cycles. This plan is for Cycle 2 and will be delivered between 2022 and 2028.

The content of the Plan has been produced by Falkirk Council as the Lead Local Authority for this LPD, in agreement with the designated Responsible Authorities, that are listed below.

• Clackmannanshire Council	• East Dunbartonshire Council
• East Lothian Council	• Scottish Forestry
• Fife Council	• The City of Edinburgh Council
• Midlothian Council	• North Lanarkshire Council
• Perth & Kinross Council	• Scottish Borders Council
• SEPA	• Scottish Flood Forum

<ul style="list-style-type: none"> <li>• South Lanarkshire Council</li> </ul>	<ul style="list-style-type: none"> <li>• Stirling Council</li> </ul>
<ul style="list-style-type: none"> <li>• Scottish Water</li> </ul>	<ul style="list-style-type: none"> <li>• West Lothian Council</li> </ul>

This plan replaces the flood risk management plan for Cycle 1, which was published in 2016.

## 1.2 Managing Flooding In Scotland

Flooding needs to be managed sustainably so that flood risk is reduced without moving the problem elsewhere. It must be done in a way that contributes to the health and wellbeing of communities, supports the protection and regeneration of the environment, improves resilience to climate change and enables a sustainable economy. Actions are needed on all sources of flooding – including from rivers, the sea, surface water and groundwater – to meet the needs of present and future generations while also protecting and enhancing the environment.

Using a 6-year planning cycle enables new data, improved techniques and developing knowledge and understanding to be incorporated regularly into the Flood Risk Management approach. Using all the latest information to regularly review our assessment of flood risk forms the foundation of a risk-based, planned approach to managing flooding sustainably. We have outlined below the key stages of the flood risk management process.

### 1.2.1 Progress in Cycle 1: 2016-2022

The 2016 local flood risk management plan outlined the long-term objectives to tackle flooding in the areas at highest risk.

The objectives for each area were agreed and actions were developed to meet these objectives. Actions to reduce flood risk included developing flood studies and flood protection schemes and providing public flood warnings and alerts. Actions to avoid flooding included maintenance of flood defences and storage areas and producing strong planning policies, which prevent development from taking place in flood risk areas.



## Flood risk management plans: Forth Estuary Local Plan District (10)

In 2019 Falkirk Council published the interim report for the Forth Estuary LPD. This report gave the status of each action at that time and reported them as red, amber, or green:

- Red: The action is running late or over budget and is unlikely to meet its aims.
- Amber: The action is running late or over budget but is still likely to meet its aims.
- Green: The action is complete or is on track to meet its aims.

Actions with a green or amber status can be expected to succeed in working towards their objectives. This final report was published February 2023.

### **1.3 How We Have Developed The Local Plan**

#### **1.3.1 Partnership Working**

Many organisations and individuals are involved in flood risk management in Scotland. The causes and effects of flooding are complex, and issues cross the boundaries of neighbouring authorities as well as the responsibilities of different organisations. To be successful, flood risk management needs coordination, as set out in the flood risk management plans. Collaboration by those responsible for flood management is essential along with a commitment to work in partnership with the other organisations and stakeholders who can contribute to the sustainable management of flooding. Partnership working is at the heart of these plans and will be central to delivery of the objectives and actions they set out.

Strong relationships were developed through the first cycle of developing and delivering flood risk management strategies and local flood risk management plans. Building on that, the local partnerships established have worked throughout Scotland to develop this second set of Local flood risk management plans. SEPA has provided technical analysis and ensured a consistent national approach is taken, providing the evidence to make informed decisions. Local authorities, Scottish Water, other responsible authorities, have made significant contributions.

They have provided local knowledge, expertise and their experience from the actions delivered in the first cycle, to inform development of the new plans. The



roles and responsibilities of some of the organisations with formal flood risk management responsibilities are set out below. There are a wide range of other stakeholders involved in flood risk management. Some work directly with responsible authorities through the local partnerships and advisory groups. Others, by virtue of their interests and activities, deliver direct action which can benefit flood risk management. Through the lifetime of this plan, we will seek to strengthen existing partnerships and establish new ones to achieve the best outcomes for flood risk management.

### 1.3.2 Roles And Responsibilities For Flood Risk Management

Individuals have a personal responsibility to protect themselves and their property from flooding. However, public bodies have responsibilities too and are working together to reduce the impacts of flooding in Scotland. Some of the key roles are outlined below and more information is available from the SEPA website, or the organisations listed.

#### Your responsibilities

It is your responsibility to manage your own flood risk and protect yourself, your family, property or business. There are steps you can take now to be flood prepared and reduce the damage and disruption flooding can have on your life.

- View SEPA's flood maps to check if your area is affected by flooding  
<https://map.sepa.org.uk/floodmaps>
- Sign up to Floodline to receive messages when flooding is forecast in your area  
<https://www.floodlinescotland.org.uk/>
- Know who to contact if flooding happens  
[https://www.sepa.org.uk/media/28952/who\\_to\\_contact\\_2014.pdf](https://www.sepa.org.uk/media/28952/who_to_contact_2014.pdf)

## **Local authorities and Lead Local Authorities**

Local authorities are responsible for working together to produce Scotland's local flood risk management plans and work in partnership with SEPA, Scottish Water and other responsible authorities to develop these.

It is the responsibility of local authorities to implement action to manage flooding and maintain flood defences. Local authorities also inspect, clear and repair watercourses to reduce flood risk and routinely maintain road gullies on public roads and highways. During severe flooding, local authorities will work with the emergency services and co-ordinate shelter for people evacuated from their homes.

## **SEPA**

SEPA is Scotland's national flood forecasting, flood warning and strategic flood risk management authority. SEPA works in partnership with the Met Office to forecast flooding and operate Floodline to warn the public and emergency responders when flooding is likely. SEPA produces Scotland's flood risk management plans, working closely with other organisations responsible for managing flood risk to ensure that a nationally consistent approach to flood risk management is adopted. SEPA also provides flood risk advice on land use planning when requested and raises awareness of flooding at a national level through education initiatives, community engagement and campaigns.

## **Scottish Water**

Scottish Water is a responsible authority for flood risk management and is working closely with SEPA, local authorities and others to coordinate plans to manage flood risk. Scottish Water has the public drainage duty and is responsible for draining wastewater from properties and businesses, and rainwater run-off from roofs and paved areas within the boundary of properties. Pipework and guttering within the boundary, are the responsibility of the property owner.

Scottish Water helps to protect homes from flooding caused by sewers either overflowing or becoming blocked. This is done in a way that is fair and consistent to customers across the country, with sewer flooding investment prioritised to provide the biggest benefit for

customers and the environment first. Currently investment to reduce the risk of sewer flooding is prioritised towards properties that have experienced internal sewer flooding and are at the highest risk of repeat occurrence of sewer flooding during frequent rainfall events.

### **National parks**

The National Park Authorities, Loch Lomond & Trossachs National Park and Cairngorms National Park, work with SEPA and other responsible authorities to develop the flood risk management plans and local flood risk management plans. They also fulfil a key role in land use planning, carrying out and permitting activities that can help manage and reduce flood risk.

### **Other organisations**

The **Scottish Government** oversees the implementation of the Flood Risk Management (Scotland) Act 2009, which requires the production of flood risk management plans and local flood risk management plans. Scottish Ministers are responsible for setting the policy framework for how organisations collectively manage flooding in Scotland.

**Scottish Forestry** and **Forestry and Land Scotland** took over the roles of Forestry Commission Scotland in 2018 when the Forestry and Land Management (Scotland) Act 2018 came into force. While these executive agencies of Scottish Government are not formally designated as a responsible authority under the Flood Risk Management (Scotland) Act 2009, they support Scottish Government in delivering its flood risk related duties. This includes engaging in the development of the flood risk management plans through national and local advisory groups, Local Plan District partnerships, and collaborative projects. This reflects the widely held view that forestry can play a significant role in managing flooding.

The **Met Office** provides a wide range of forecasts and weather warnings. SEPA and the Met Office work together through the [Scottish Flood Forecasting Service](#), combining SEPA's hydrological expertise with the Met Office's meteorological data to predict the likelihood and timing of river, coastal and surface water flooding.

The **emergency services** provide emergency relief when flooding occurs and can coordinate evacuations. You should call the emergency services on 999 if you are concerned about your safety or the safety of others and act immediately on any advice provided.

The **Scottish Flood Forum** aims to reduce the impacts of flooding by providing immediate support and by establishing a network of community resilience groups in flood risk areas, to equip communities to cope with flooding.

### **1.3.3 Consultation, Engagement And Advice**

Further to the strong partnership approach to flood risk management planning in Scotland, it is essential to work with the people and communities that experience and live with the threat of flooding. This ensures that our assessment of the risk is accurate. How flooding is managed should support the communities at risk and effort needs to be targeted to where most can be achieved. Public consultations have been held, jointly with SEPA, during the development of this Plan.

The most recent consultation ran from July 2021 to October 2021 and covered information on the objectives and actions planned for each target area within the Forth Estuary. The consultation was advertised widely by both Falkirk Council and SEPA.

Falkirk Council submitted a Strategic Environmental Assessment (SEA) Screening Report to the SEA Gateway. The SEA Gateway advised that a Strategic Environmental Assessment was not required for the Plan.

A Habitats Regulations Appraisal (HRA) has been undertaken for the Suite of National Flood Risk Management Plan that has informed the Plan. Where the HRA identified mitigation measures to protect the nature interests, these have been incorporated into the Plan, this only includes actions identified in the Suite of National Flood Risk Management Plan. Studies included in the Suite of National Flood Risk Management Plan and the Plan may recommend schemes or works that will be the subject of future and full assessment would be undertaken as part of the development process. Where studies identify actions likely to have significant effects on qualifying interests of nature sites an appropriate assessment will be required. Where it cannot be shown that there will be no adverse effect on site integrity, proposals will be refused.

## **1.4 Links with other plans and policies**

### **1.4.1 River Basin Management Planning**

River basin management aims to protect and improve the condition of Scotland's rivers, lochs, estuaries, coastal waters, and groundwater. Taking action to reduce flood risk in Scotland provides opportunities to deliver joint objectives for restoration and flood risk management. Coordination between river basin management and flood risk management can reduce flood risk, while also improving water quality and biodiversity. SEPA is leading the delivery of both the river basin management plan and the flood risk management plans so has worked to ensure that there is integration and coordination between them. This coordination, particularly in regard to consultation and engagement, is important for stakeholders who have an interest in the objectives of both plans.

### **1.4.2 Land Use And Spatial Planning**

Land use planning decisions are pivotal to achieving sustainable flood risk management. Flood risk management can have significant implications for the location of development and similarly the location of development can have an impact on flood risk. Actions that deliver national land use planning policies are summarised in Annex 3.

The Falkirk Council develops and adopts a new Local Development Plan every five years. It sets out the Council's strategy for delivering appropriate development in Falkirk, considering several potential constraints, including flooding. The current plan was adopted in 2017.

### **1.4.3 Emergency Planning And Response**

Emergency planning and response is undertaken by Category 1 and 2 responders including Police Scotland, the Scottish Fire and Rescue Service, the Scottish Ambulance Service, both local authorities, the NHS, the Met Office and SEPA. Emergency plans are prepared under the Civil Contingencies Act 2004. The Falkirk Council is part of the Forth Valley Incident Assistance team, which is part of the Local Resilience Partnership, covering Stirling, Falkirk, Clackmannanshire. These partnerships coordinate the

emergency response to flood events, such as road closures, evacuations, and temporary accommodation.

#### **1.4.4 Scottish Water Investment Plans**

There is a close relationship between Local flood risk management plans and Scottish Water's 25-year strategic plan. Sewer flooding is not considered in detail in the flood risk management plans as this is overseen by the water industry regulator for Scotland. Sewer flooding remains a high priority for Scottish Water and its customers. Scottish Water's close involvement in flood risk management aims to ensure that there is strong coordination between the management of sewer flooding and wider surface water risk, and the actions to be taken by local authorities and others.

#### **1.4.5 Duty To Assess Bodies Of Water And Schedule Clearance And Repair Works**

Each local authority has their own system of assessing and maintain water bodies, to align with their duties under the Flood Risk Management (Scotland) Act 2009. The duty to assess specific watercourses and schedule clearance and repair works lies with the local authority.

The local authority has a risk-based approach to assessing bodies of water that may give rise to flooding. Where potential flood risk has been identified the relevant water body has been included in the Council's routine inspection schedule.

### **1.5 Next Steps And Monitoring Progress**

The Falkirk Council and the other responsible authorities are committed to continue to work together, improving the understanding and response to flooding and managing flood risk for the good of Scotland through this and subsequent planning cycles.

Progress will be monitored throughout the years covered by this plan through ongoing joint working arrangements under the Local Plan District partnerships. Lead local authorities will provide an interim report on the progress of delivering all actions in the local flood risk management plans not earlier than 2 years and not later than 3 years from its publication. A final report will also be prepared at the end of the second planning cycle.

A third set of flood risk management plans and local flood risk management plans will be published in 2027/2028.

### **1.5.1 Funding Review For Future Local Flood Risk Management Actions**

The distribution of Scottish Government grant funding for actions in the plan for the period 2022 – 2028 is currently being considered by a flood risk management working group<sup>1</sup>. This group will put forward options and recommendations to Scottish Ministers and COSLA, through the Settlement and Distribution Group, for consideration. A decision will not be made in time for the publication of this plan. As such it should be noted that it may not be possible for all actions identified in the Plan to be grant funded. Inclusion of an action in this plan does not formally commit a Council to implement it, if reasons arise which make any actions undeliverable, including inability to secure adequate funding.

This plan remains the best understanding of the objectives and actions required over the long term to manage flood risk in the identified high-risk areas within this LPD. The delivery of the Plan, particularly the ambitions on how quickly actions can be delivered, may have to be adapted to reflect wider developments in public funding, the ability of responsible authorities to access funding from other sources, pandemic recovery, and other national priorities.

### **1.5.2 Licensing Acknowledgements**

Full data licensing acknowledgements can be found in Annex 4 of this plan.

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<sup>1</sup> Membership of the group includes representatives from Scottish Government, the Convention of Scottish Local Authorities (COSLA), local authorities, Society of Chief Officers of Transportation in Scotland (SCOTS) flood risk management group and SEPA.



# Forth Estuary Local Plan District (LPD 10)

## Flood risk management plans 2022-2028

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The Forth Estuary Local Plan District covers around 3,300km<sup>2</sup> and has a population of approximately 1.4 million people. It spans an area north and south of the Forth Estuary which is mostly low-lying and urbanised, and includes part of Scotland's Central Belt. The Local Plan District has 380km of coastline that includes Fife Ness, the Firth of Forth and the Berwickshire coast. Urban areas include the City of Edinburgh, Dunbar, Dunfermline, Eyemouth, Falkirk, Glenrothes, Kinross, Kirkcaldy and Livingston.

There are large areas of agricultural land, with more natural grasslands and forest to the south and west. A number of lochs and reservoirs are present including Loch Leven and Loch Ore in the north and the Carron Valley Reservoir in the west. Gladhouse Reservoir and the reservoirs of the Pentland Hills are in the south of the Local Plan District. The main rivers include the River Tyne, River Esk, Water of Leith, River Almond, River Leven and River Carron.

There is river, surface water and coastal flood risk. A number of large floods have affected this Local Plan District. In the summer of 2019 heavy rainfall led to a series of surface water floods in towns across the area. In February 2020, heavy rainfall resulted in significant flooding of several residential and commercial properties in Kinross from the South Quiech and surface water flooding. Recent flooding occurred in many locations in August 2020 due to high intensity rainfall.

Currently it is estimated that there are around 115,000 people and 65,000 homes and businesses at risk from flooding. This may increase to 160,000 people and 89,000 homes and businesses by the 2080s due to climate change.

SEPA lead development of the flood risk management plans for Scotland and delivery of flood warning services. Local flood risk management planning for

## Flood risk management plans: Forth Estuary Local Plan District (10)

the Forth Estuary Local Plan District is led by Falkirk Council, who are the lead local authority.

Other responsible authorities include 11 other local authorities and Scottish Water. They are supported by Scottish Government agencies including Forestry and Land Scotland, Scottish Forestry and Transport Scotland.

Within this Local Plan District, actions are regularly carried out by SEPA and responsible authorities to help prepare communities for potential flooding and reduce the impact of any flooding that does occur.

### Actions across the Local Plan District

SEPA and responsible authorities carry out actions in all areas of the Local Plan District which help to manage current and future flooding. These actions help to ensure that key aspects of flood risk management are taken forward in all locations. They ensure that for example new housing developments occur in the right places, and that critical flood risk information is developed and updated for all areas. The following actions are due to take place over the next 6 years, and most of these are carried out on an ongoing basis.

	Awareness raising
Action	<p>SEPA, the responsible authorities and other organisations such as the Scottish Flood Forum work together through national and local initiatives to help communities understand the risk of flooding and what actions individuals can take. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact of flooding.</p> <p>Local authorities undertake additional awareness raising activities when developing any specific project proposals and will engage with community resilience groups and local communities.</p>

## Flood risk management plans: Forth Estuary Local Plan District (10)

	The Scottish Flood Forum support flood risk communities by raising community awareness, promoting self-help, developing community groups and establish a recovery support programme after a flood.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Local authorities fund activities through their revenue budgets.
<b>Co-ordination</b>	Delivery of actions to raise awareness will be coordinated by the responsible authorities through the Local Plan District Partnership.
<b>Timing</b>	2022-2028

	<b>Data to support climate resilience</b>
<b>Action</b>	<p>As Scotland's hydrometric authority, SEPA operates a network of stations to measure river level, flow, rainfall, sea level, loch and groundwater level. The data goes into a long term data archive and is critical to underpin all flood risk management activities including flood warning, flood mapping, design of flood protection and sustainable development as well as supporting a range of regulatory and recreational uses.</p> <p>SEPA will continue to maintain and develop its hydrometric network, contribute to UK and international data archives, and improve and update the datasets used for flood frequency analysis.</p> <p>SEPA will support research and development of data, methods and guidance to improve the evidence on which decisions can be made, and to enable the impact of climate change to be included in all flood risk management activities.</p>
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	SEPA will coordinate with a range of other parties as required to deliver better and more accessible data, and ongoing improvements to the use of the data to underpin flood risk management activities and decisions.

## Flood risk management plans: Forth Estuary Local Plan District (10)

<b>Timing</b>	2022-2028
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<b>Emergency plans</b>	
<b>Action</b>	<p>Many organisations, including local authorities, the emergency services and SEPA provide an emergency response to flooding. Emergency plans are prepared and maintained under the Civil Contingencies Act 2004 by Category 1 and 2 Responders and are coordinated through regional and local resilience partnerships, often supported by voluntary organisations. They set out the steps to be taken to maximise safety and minimise impacts during flooding. Emergency plans may also be prepared by individuals, businesses, organisations or communities. Scottish Water is a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.</p>
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Local authorities fund activities through the block grant settlement allocation.
<b>Co-ordination</b>	Delivery of emergency plans will be coordinated by the regional partnerships through civil contingencies arrangements.
<b>Timing</b>	2022-2028

<b>Flood forecasting</b>	
<b>Action</b>	<p>The Scottish Flood Forecasting Service is a partnership between SEPA and the Met Office. The service continues to produce a daily, national flood guidance statement, issued to emergency responders, local authorities, and other organisations with flood risk management duties. In 2022 a new 3-day daily Scottish Flood Forecast was launched for the public.</p> <p>As the flood warning authority for Scotland SEPA continues to provide its flood warning service issuing flood alerts and warnings</p>

## Flood risk management plans: Forth Estuary Local Plan District (10)

	when required, giving people a better chance of reducing the impact of flooding on their home or business.
<b>Funding</b>	SEPA work in partnership with the Met Office and will work closely with all other authorities involved in emergency response to flooding.
<b>Co-ordination</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Timing</b>	2022 - 2028

	<b>Flood warning development framework</b>
<b>Action</b>	<p>SEPA published a new flood warning development framework in 2022, which details the ambition and strategic actions to maintain and improve the flood warning service across Scotland.</p> <p>SEPA will further develop phase 1 of the Scottish Flood Forecast based on feedback gathered during public beta release before fully launching the service to the public formally in early 2023. Phase 1 is the national 3-day flood forecast and the starting point of our journey in providing the public with earlier and improved flood information.</p> <p>SEPA will continue to follow the service design approach for phase 2 of the Scottish Flood Forecast, which will provide the public with more localised flood forecast information. User research will determine what information will be displayed on the regional flood forecast webpages. It is anticipated that the final service will bring together all live information such as flood warnings, river levels and rainfall data into a central hub that is easily accessible for the public.</p>

Flood risk management plans: Forth Estuary Local Plan District (10)

	Working in close partnership with the Met Office through the Scottish Flood Forecasting Service, SEPA will develop its capability in surface water flooding forecasting, focusing initially on the transport sector to support climate-ready infrastructure. SEPA will also undertake a prioritised improvement programme of existing river and coastal flood warning schemes to provide more accurate forecasting with improved lead time.
<b>Funding</b>	SEPA work in partnership with the Met Office. Appropriate engagement with the other authorities involved in emergency response will happen as the flood warning developments are progressed.
<b>Co-ordination</b>	SEPA work in partnership with the Met Office. Appropriate engagement with the other authorities involved in emergency response will happen as the flood warning developments are progressed.
<b>Timing</b>	2022 - 2028

<b>Future flood risk management planning</b>	
<b>Action</b>	<p>The years covered by the lifetime of this plan are crucial. Radical progress is needed in how we reduce our impact on the climate and respond to the effects of climate change. How we plan to manage flooding to our communities is on the front line of the challenges of this decade. The 2027 flood risk management plans will be more ambitious than ever before. The plans will look to develop long term plans for more flood resilient communities prepared for the impacts of climate change.</p> <p>The priority areas which will be the focus points of the next flood risk management plans will be identified in 2024 with the designation of PVAs. A 3-month public consultation will be held to inform the PVA designation.</p> <p>We will plan for a better future by publishing our flooding services strategy in 2023 with a clear and measurable delivery plan. We will put greener, fairer communities at the heart of our ambitions.</p>

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>SEPA has set its own target to be a regenerative organisation by 2030 and the next set of plans will further this ambition.</p> <p>During this plan cycle, SEPA will work to develop new partnerships with a wider range of stakeholders, including businesses and commercial sectors. We will investigate alternative sources of finance to tackle flooding and drive forward practical options for adaptation.</p>
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Local authorities fund activities through the block grant settlement allocation.
<b>Co-ordination</b>	SEPA will lead the work, in partnership with the Scottish Government and other responsible authorities. A wider range of partners and stakeholders will be developed to support the action. SEPA will carry out a full consultation on the next draft flood risk management plans in 2026.
<b>Timing</b>	<p>Ongoing / 2022-2028</p> <p>Flooding services strategy 2023</p> <p>Next flood risk management plans 2027</p>

	<b>Guidance development</b>
<b>Action</b>	<p>The Scottish Government and SEPA will develop and update guidance to inform flood risk management projects. This guidance will be produced in 2022 and will look at how best to adapt to the long-term impacts of climate change and the most appropriate methods of assessing the benefits of flood risk management actions.</p> <p>Technical guidance to support flood risk management partners will be reviewed and updated by SEPA where required.</p> <p>Scottish Forestry, in collaboration with its UK counterparts, will produce guidance on designing and managing forests to reduce flood risk.</p>



## Flood risk management plans: Forth Estuary Local Plan District (10)

	Guidance will be developed to help local authorities understand the requirements for mapping relevant bodies of water and sustainable urban drainage systems in their areas.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	The Scottish Government, SEPA and Scottish Forestry all have lead roles in delivering the new or updated guidance outlined. A range of forums will be used to help coordinate and develop the guidance with the appropriate input from others, including SAIFF (The Scottish Advisory Implementation Forum for Flooding) and cross-party working groups.
<b>Timing</b>	Draft flood studies guidance (SEPA) 2023 Options appraisal & Adaptation guidance (SG & SEPA) 2023 Other guidance & updates 2023-2028

<b>Hazard mapping updates</b>	
<b>Action</b>	An understanding of flooding is essential to develop a plan led risk-based approach to flood risk management. SEPA will continue to update their national hazard mapping, which shows the likelihood of flooding in Scotland from different flooding sources: <a href="https://www.sepa.org.uk/environment/water/flooding/flood-maps/">https://www.sepa.org.uk/environment/water/flooding/flood-maps/</a> SEPA will continue to develop the hazard mapping viewer to make it easier for the public, partners and stakeholders to access data on the likelihood of flooding. SEPA will also review how modelling and mapping updates are undertaken to develop a more effective method of regional and national updates for the hazard maps.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	SEPA will work with other relevant parties - including authorities who have ownership of data used in flood mapping - to develop the quality and accessibility of flood hazard mapping.
<b>Timing</b>	2022-2028

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<b>Land use planning</b>
<b>Action</b>	Local authorities, SEPA and Scottish Water all have a responsibility under the Flood Risk Management (Scotland) Act 2009 to support sustainable flood risk management through the land use planning process. National planning policies set out the Scottish Ministers' priorities for the development and use of land. Under this approach, new development in areas with medium to high likelihood of flooding should generally be avoided. Current national planning policies aim to restrict development within the floodplain and limit exposure of new receptors to flood risk, promote flood reduction via natural and structural flood management measures and restoration of natural features, and avoid increased surface water flooding through sustainable drainage and the minimisation of impermeable surfaces. Locally determined planning policies may place further requirements within their area of operation to restrict inappropriate development and prevent unacceptable risk.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Local authorities fund activities through their revenue budgets.
<b>Co-ordination</b>	SEPA delivery statutory advice on flooding on both planning applications and Local Development Plans and will continue to work with the other responsible authorities to support the land use planning process. Each Planning Authority coordinates the responses of statutory authorities and any other relevant organisations when considering new planning applications. Local Development Plans are reviewed periodically and undergo a widespread and lengthy consultation (called the Main Issues Report) - coordinated by the Planning Authorities
<b>Timing</b>	2022 - 2028

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<b>Maintenance</b>
<b>Action</b>	<p>Local authorities have a duty to assess bodies of water and to carry out clearance and repair works where such works would substantially reduce flood risk. Local authorities are also responsible for the drainage of roads.</p> <p>In addition, local authorities may also be responsible for maintenance of any existing flood protection schemes or works.</p> <p>Scottish Water will continue to undertake risk-based inspection, maintenance, and repair on the public sewer network.</p> <p>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>
<b>Funding</b>	Local authorities fund activities through their revenue budgets, specific activities will be dependent on funds made available on an annual basis.
<b>Co-ordination</b>	Local authorities assess and prioritise clearance and repair works which are published annually in a schedule, some activities require co-ordinated work between different responsible authorities.
<b>Timing</b>	2022-2028

	<b>Natural flood management mapping</b>
<b>Action</b>	SEPA will continue to support activities that improve our understanding of how to effectively target and deliver natural flood management. As part of this, SEPA will review and update the opportunities mapping for natural flood management. This will include linking blue-green infrastructure with the surrounding natural catchment and coastline. Natural flood management seeks to store or slow down flood waters through measures such as the planting of woodlands, wetland creation, river restoration, or the creation of intertidal habitats. In addition to flooding benefits, natural flood

## Flood risk management plans: Forth Estuary Local Plan District (10)

	management measures can also provide many additional benefits to biodiversity, water quality, recreation, and carbon storage.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	SEPA will work with key stakeholders to review and update the opportunities mapping.
<b>Timing</b>	2025

<b>National flood risk assessment</b>	
<b>Action</b>	SEPA will use the most suitable data to review and update the national flood risk assessment (NFRA) undertaken in 2018. This update will be used to identify future potentially vulnerable areas and focus flood risk management planning.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	SEPA will work with others as the NFRA is updated, including to keep other responsible authorities informed through the Local Plan District Partnerships.
<b>Timing</b>	December 2024

<b>National surface water mapping</b>	
<b>Action</b>	The national flood risk assessment 2018 identified that surface water flooding has the potential to impact more properties in Scotland than any other source of flooding. Over the next 6 year cycle SEPA will look to vastly improve its national understanding of surface flood risk by undertaking a wholesale update of the national surface water maps to reflect developments in data and understanding, including the impact of climate change.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	SEPA is currently working with a contractor to develop the modelling needed to deliver the flood maps. As the mapping is developed, local authorities and Scottish Water will continue to be engaged in opportunities

## Flood risk management plans: Forth Estuary Local Plan District (10)

	to verify, shape and understand the new mapping products.
<b>Timing</b>	2024

<b>Reservoirs</b>	
<b>Action</b>	SEPA will continue to develop its assessment of flood risk from dam failure and use these assessments to direct a proportionate regulatory approach to ensure reservoir safety. Over the next management cycle, we will implement further developments of our flood warning capabilities in the unlikely event of reservoir failure.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	SEPA will work with others as required, to deliver the regulatory duties and to develop flood warning capabilities. Others will include reservoir managers and operators, and Civil Contingencies Act responders who share duties for emergency response.
<b>Timing</b>	Ongoing / 2022-2028 Flood warning developments 2022-2024

<b>Scottish Flood Defence Asset Database</b>	
<b>Action</b>	The Scottish Flood Defence Asset Database provides information on existing flood protection schemes. National data on flood protection infrastructure is needed to understand flood risk and to develop adaptation planning for Scotland. SEPA will continue to host SFDAD and look for opportunities to support the development of our understanding of how and when Scotland's flood defence assets should be adapted to continue to maintain protection from flooding in the future.
<b>Funding</b>	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Co-ordination</b>	SEPA will work with the local authorities to ensure accurate data on existing and new schemes is made available for the Scottish Flood Defence Asset Database.
<b>Timing</b>	2022-2028

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<b>Self help</b>
<b>Action</b>	<p>Everyone is responsible for protecting themselves and their property from flooding. People can take 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 flood resilience measures, signing up to Floodline, engaging with their local flood group, and ensuring that properties and businesses are insured against flood damage. The following places offer help with taking steps to protect yourself:</p> <p><a href="https://www.floodre.co.uk/">https://www.floodre.co.uk/</a></p> <p><a href="https://www.biba.org.uk/current-issues/flood-insurance/">https://www.biba.org.uk/current-issues/flood-insurance/</a></p> <p><a href="https://floodlinescotland.org.uk/">https://floodlinescotland.org.uk/</a></p> <p><a href="https://scottishfloodforum.org/">https://scottishfloodforum.org/</a></p> <p>Responsible authorities and SEPA will continue to develop the understanding of flood risk to communities and promote measures to help individuals and businesses to reduce their risk.</p>
<b>Funding</b>	Individuals, in some cases grant funding may be available.
<b>Co-ordination</b>	A combined effort by responsible authorities to promote self-help through different avenues.
<b>Timing</b>	2022-2028

More specific local actions to manage flood risk in target areas are detailed in the potentially vulnerable areas (PVAs) sections below.

## Potentially vulnerable areas

Potentially vulnerable areas (PVA) were designated in 2018 based on the potential current or future risk from all sources of flooding. This designation was informed by the national flood risk assessment (available to view at: <https://www.sepa.org.uk/data-visualisation/nfra2018/>). As part of continued analysis of flood risk, the national flood risk assessment and potentially vulnerable areas (PVA) will be reviewed every 6 years to take on board any new information. There are 30 potentially vulnerable areas (PVA) in this Local Plan district. Following sections provide more information on these areas.



Flood risk management plans: Forth Estuary Local Plan District (10)

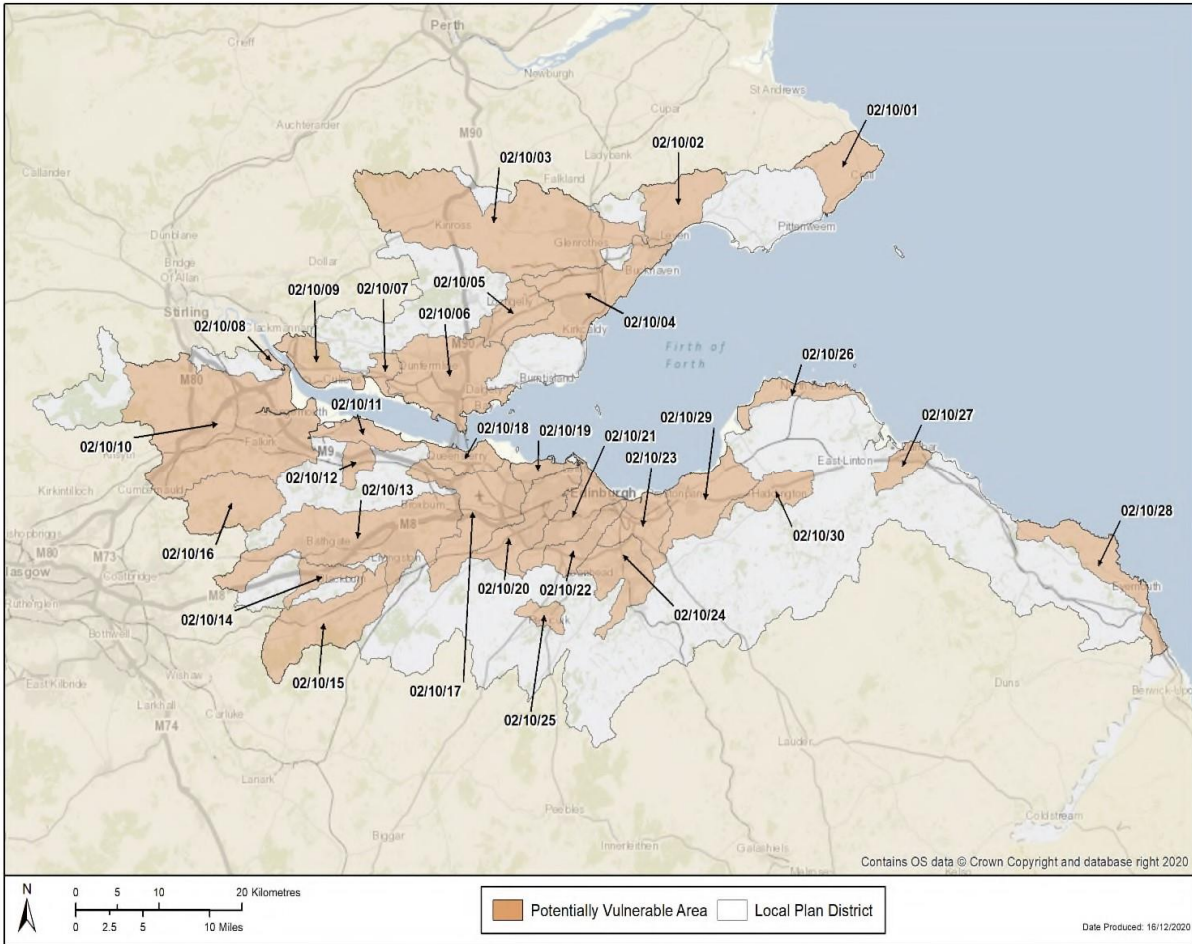


Figure 1. Potentially vulnerable areas in Forth Estuary Local Plan District

## LPD 10 Forth Estuary – List of PVAs

Click the [blue text](#) to select your area of interest

PVA Ref	PVA Name	Local authority area	Page numbers
02/10/01	<a href="#">Crail</a>	Fife	33
02/10/02	<a href="#">Leven and Lower Largo</a>	Fife	36
02/10/03	<a href="#">Kinross, Milnathort and Glenrothes</a>	Fife, Perth & Kinross	45
02/10/04	<a href="#">Kirkcaldy</a>	Fife	62
02/10/05	<a href="#">Cardenden and Cowdenbeath</a>	Fife	78
02/10/06	<a href="#">Inverkeithing, Rosyth and Dunfermline</a>	Fife	89
02/10/07	<a href="#">Cairneyhill</a>	Fife	107
02/10/08	<a href="#">Airth</a>	Falkirk	119
02/10/09	<a href="#">Kincardine and Culross</a>	Fife	124
02/10/10	<a href="#">Falkirk and Grangemouth</a>	Falkirk, North Lanarkshire	136
02/10/11	<a href="#">Bo'ness</a>	Falkirk	176
02/10/12	<a href="#">Linlithgow</a>	West Lothian	190
02/10/13	<a href="#">Livingston, Broxburn and Bathgate</a>	West Lothian	198
02/10/14	<a href="#">Whitburn</a>	West Lothian	221
02/10/15	<a href="#">West Calder and Fauldhouse</a>	West Lothian	228
02/10/16	<a href="#">Slamannan</a>	Falkirk	235
02/10/17	<a href="#">Edinburgh West</a>	City of Edinburgh	240

## Flood risk management plans: Forth Estuary Local Plan District (10)

<b>PVA Ref</b>	<b>PVA Name</b>	<b>Local authority area</b>	<b>Page numbers</b>
02/10/18	<a href="#">South Queensferry</a>	City of Edinburgh	250
02/10/19	<a href="#">Edinburgh North</a>	City of Edinburgh	254
02/10/20	<a href="#">Edinburgh, Water of Leith</a>	City of Edinburgh	261
02/10/21	<a href="#">Edinburgh, Braid Burn</a>	City of Edinburgh	269
02/10/22	<a href="#">Edinburgh, Niddrie Burn and Burdiehouse</a>	City of Edinburgh, Midlothian	278
02/10/23	<a href="#">Musselburgh</a>	East Lothian, Midlothian	288
02/10/24	<a href="#">Dalkeith, Lasswade and Newtongrange</a>	Midlothian	299
02/10/25	<a href="#">Penicuik</a>	Midlothian	314
02/10/26	<a href="#">North Berwick</a>	East Lothian	319
02/10/27	<a href="#">Dunbar and West Barns</a>	East Lothian	324
02/10/28	<a href="#">Berwickshire Coast</a>	Scottish Borders	333
02/10/29	<a href="#">Cockenzie, Port Seton, Longniddry and Prestonpans</a>	East Lothian	341
02/10/30	<a href="#">Haddington</a>	East Lothian	368

## 02/10/01 (Crail)

This area is designated as a potentially vulnerable area due to flood risk to Crail. The main source of flood risk is considered to be the Crail Burn. It should be noted that there is currently low confidence in flood risk data for this area.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Crail (target area 216)

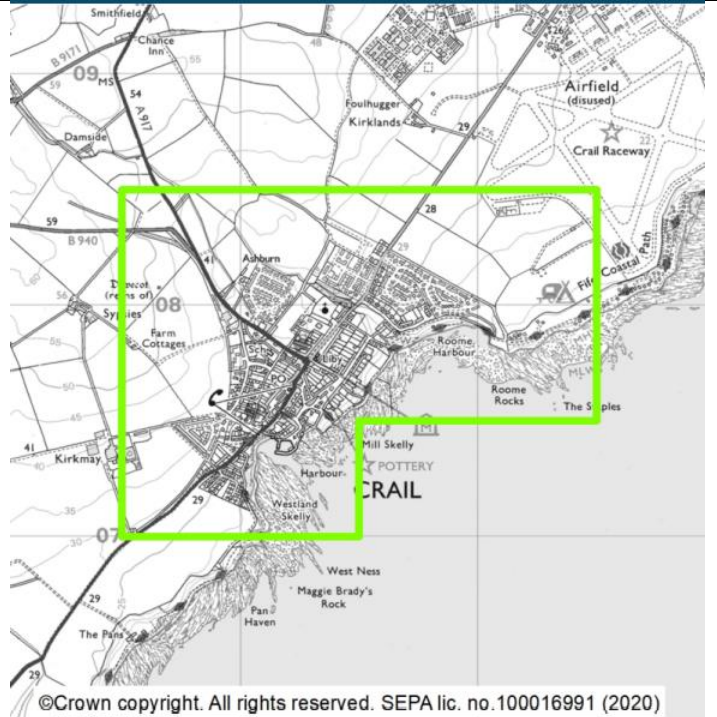
Local Flood Risk Management plan datasheet

Crail (target area 216)

Summary

Crail is a town located on the east coast of Scotland in Fife. The main source of flooding in Crail is river flooding from the Crail Burn. There are approximately 320 people and 200 homes and businesses currently at risk from flooding. This is likely to increase to 350 people and 210 properties and businesses by the 2080s due to climate change. It should be noted that there is currently low confidence in the national flood risk data for this area.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. There are limited records of flooding in this target area.

Objective	ID	Description
Avoid flood risk	2161	Avoid inappropriate development that increases flood risk in Crail
Improve data and understanding	2162	Improve data and understanding of river flooding from the Crail Burn in Crail

## Flood risk management plans: Forth Estuary Local Plan District (10)

Prepare for flooding	2163	Prepare for current flood risk and future flooding as a result of climate change in Crail
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Action ID	Crail	21601	
Action Type	Flood risk management review		
Action Delivery Lead	SEPA	Indicative Delivery	2022-2028
Description	No local actions specific to this target area have been identified yet. There are national actions planned that will cover this area, including an update to SEPA's surface water flood maps and an update to the national flood risk assessment. These, along with other actions that are carried out across the whole local plan district covering this area, will help to manage flood risk in the long term. The need for actions for this area will be reviewed again in 2026.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the other responsible authorities to review flood risk management for this area, through the Local Plan District Partnerships. A public consultation on priority areas will be held in 2024 by SEPA, which will be open for three months. A public consultation on future flood management actions will be held in December 2026 and will be open for at least three months.		

## 02/10/02 (Leven and Lower Largo)

This area is designated as a potentially vulnerable area due to flood risk to Leven and Lower Largo. The main source of flooding is surface water, along with river flood risk from the River Leven and other watercourses, sometimes in combination with high tides. There is a history of flooding in this area, with records of flooding to properties, road closures and damage to some infrastructure in Leven.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

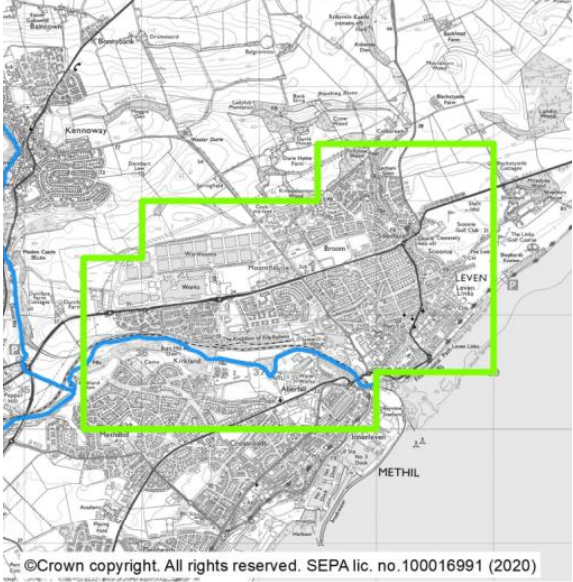
Leven (target area 244)

Lower Largo and Lundin Links (target area 298)



Local Flood Risk Management plan datasheet

Leven (target area 244)

Summary	Location Map
<p>The town of Leven is located on the east coast of Scotland on the mouth of the River Leven. It is in the Fife Council area. The main source of flooding in Leven is from surface water, however there is also a risk from river flooding. There are approximately 1,400 people and 820 homes and businesses currently at risk from flooding. This is likely to increase to 1,700 people and 1,000 homes and businesses by the 2080s due to climate change.</p>	

What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by the Leven Valley Integrated Catchment Study and a sewer flood risk assessment. There is a long record of flooding in this target area.

Objective	ID	Description
Avoid flood risk	2441	Avoid inappropriate development that increases flood risk in Leven

## Flood risk management plans: Forth Estuary Local Plan District (10)

Prepare for flooding	2442	Prepare for current flood risk and future flooding as a result of climate change in Leven
Reduce flood risk	2443	Reduce the risk of river flooding from the River Leven and Scoonie Burn in Leven
Reduce flood risk	2444	Reduce the risk of surface water flooding in Leven

Action ID	Leven 24401		
Action Type	Flood study		
Action Delivery Lead	Fife Council	Indicative Delivery	Tender to be issued for Scoonie FS, Leven FS linked to Rail link, WEF resoration
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The scheduled cycle 1 flood study considering river flood risk from the River Leven and Scoonie Burn should be completed. The study should include a comprehensive assessment of the potential impacts of climate change and aim to develop a long-term plan to managing flood risk.</p>		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and the action will be coordinated with the Leven project.		

Action ID	Leven 24402		
Action Type	Flood warning scoping		
Action Delivery Lead	SEPA	Indicative Delivery	First half of cycle

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	Following completion, the flood study will be reviewed to determine if further flood warning investigation is necessary.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with Fife Council on the potential to coordinate flood warning development with the flood study investigation.

Action ID	Leven	24403
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Leven Valley sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan.	
Coordination	Action delivery lead is Scottish Water in coordination with the local authority and SEPA.	

Action ID	Leven	24404
Action Type	Surface water management plan	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action Delivery Lead	Fife Council	Indicative Delivery	To be completed early in FRM Cycle 2
Description	Development of the surface water management plan should continue based on the findings of the integrated catchment study and the sewer flood risk assessment. Current and long term flood risk should be considered.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.		

Action ID	Leven	24405	
Action Type	Community engagement		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.		

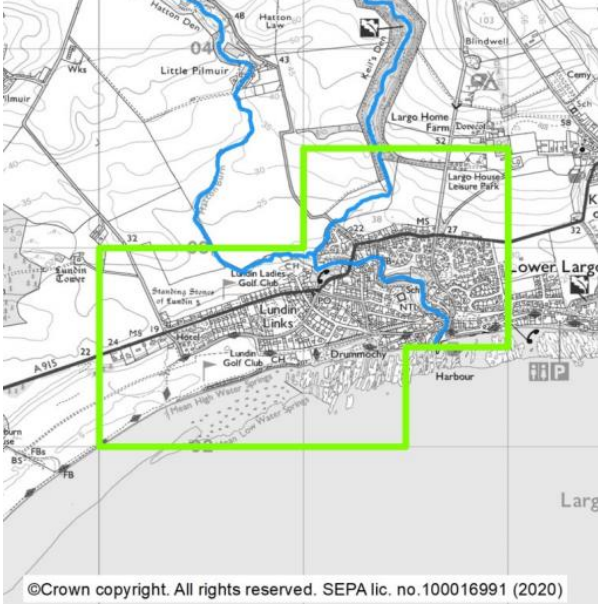
Action ID	Leven	24406	
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with Fife Council on the potential to coordinate flood warning development with the flood study investigation. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.

## Local Flood Risk Management plan datasheet

Lower Largo (target area 298)

Summary	Location Map
<p>Lower Largo and Lundin Links are located on the northern shore of the Firth of Forth, within the Fife Council area. The main source of flooding in Lower Largo and Lundin Links is river flooding, however there is also a risk from coastal flooding. There are approximately 140 people and 90 homes and businesses currently at risk from flooding. This is likely to increase to 160 people and 100 homes and businesses by the 2080s due to climate change.</p>	 <p>©Crown copyright. All rights reserved. SEPA lic. no.100016991 (2020)</p>

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources and this information has highlighted the risk of flooding in this target area. There are limited records of flooding in this area. The first flood recorded in the area occurred in January 2005 when a house in Lower Largo flooded. A notable flood was recorded in March 2018 when the Beast from the East caused waves to overtop the harbour wall, flooding a nearby hotel.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken

## Flood risk management plans: Forth Estuary Local Plan District (10)

should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Action ID	Lower Largo and Lundin Links 29801		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

Action ID	Lower Largo and Lundin Links 29802		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.
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Action ID	Lower Largo and Lundin Links 29803		
Action Type	Flood study		
Action Delivery Lead	Fife Council	Indicative Delivery	Cycle 2
Description	An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		



## 02/10/03 (Kinross, Milnathort and Glenrothes)

This area is designated as a potentially vulnerable area due to flood risk to Glenrothes, Kinglassie, Kinross, Markinch and Milnathort. The main source of flooding is surface water and river flooding from the South Queich, Lochty Burn, Gelly Burn and Clash Burn. There is a long history of flooding in this area, with recent flooding caused by surface water and the South Queich in Kinross.

There are 3 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Glenrothes, Kinglassie and Markinch	(target area 231)
Kinross	(target area 239)
Milnathort	(target area 303)

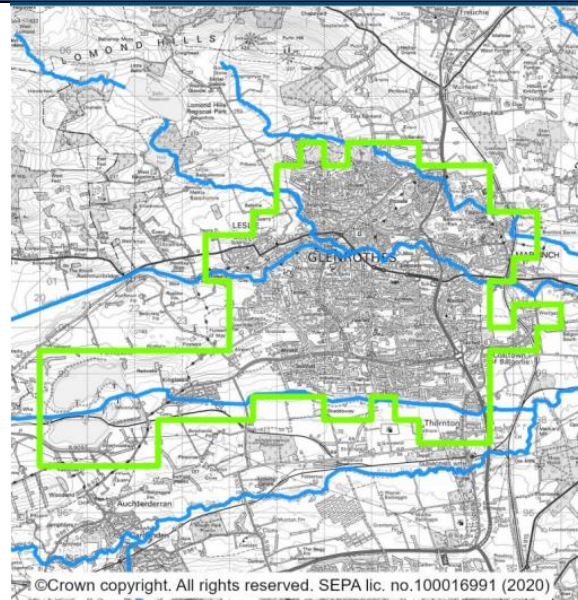
Local Flood Risk Management plan datasheet

Glenrothes, Kinglassie and Markinch (target area 231)

Summary

Glenrothes, Markinch and Kinglassie are located in east central Scotland within the Fife Council area. The main source of flooding in Glenrothes and Markinch is surface water and in Kinglassie is the Lochty Burn. There are approximately 1,900 people and 1,200 homes and businesses currently at risk from flooding. This is likely to increase to 2,600 people and 1,700 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study of the Leven Valley and a sewer flood risk assessment of the Leven sewer catchment. There is a long record of flooding in the target area. Recent floods were recorded in February 2020 and in August 2020 when severe rainfall caused disruption to the community, property damage and impacts on the roads network.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2311	Avoid inappropriate development that increases flood risk in Glenrothes and Markinch
Prepare for flooding	2312	Prepare for current flood risk and future flooding as a result of climate change in Glenrothes and Markinch
Reduce flood risk	2313	Reduce the risk of surface water flooding in Glenrothes and Markinch
Reduce flood risk	2314	Reduce the risk of river flooding in Kinglassie

Action ID	Glenrothes, Markinch and Kinglassie 23101		
Action Type	Flood study		
Action Delivery Lead	Fife Council	Indicative Delivery	Completed financial year 2022-23
Description	Flood study covering Glenrothes, Markinch and Kinglassie looking at river flood risk should be completed, taking into account the results of the integrated catchment study. The study should include modelling of flood risk and high level appraisal of actions.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordinated with the Leven project.  SEPA will work with the local authority on the potential to coordinate this action with the Back Burn WEF project.		

Action ID	Glenrothes, Markinch and Kinglassie 23102		
Action Type	Sewer flood risk assessment		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Leven Valley sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority and SEPA.		

Action ID	Glenrothes, Markinch and Kinglassie 23103		
Action Type	Surface water management plan		
Action Delivery Lead	Fife Council	Indicative Delivery	To be completed early in FRM Cycle 2
Description	A surface water management plan for Glenrothes and Markinch should be drawn up following the outcomes of the Levenmouth Integrated Catchment Study to address more local surface water flooding issues.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Glenrothes, Markinch and Kinglassie 23104		
Action Type	Community engagement		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.		

Local Flood Risk Management plan datasheet

Kinross (target area 239)

Summary

The town of Kinross is located around 20km south of Perth. The main sources of flooding in Kinross are surface water and river flooding from the South Queich, Gelly Burn and Clash Burn. The local authority has carried out a flood study in this area in support of the proposed flood scheme. The study indicates that 129 homes and 55 businesses are currently at risk of flooding from the South Queich, the Gelly Burn and the Clash Burn.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national assessments of flooding from rivers, surface water and coastal sources. The national assessment for river flooding was improved by flood study work supporting the on-going development of proposals for the South Kinross Flood Protection Scheme. The understanding of surface water flooding was also improved by Scottish Water’s sewer flood risk assessment.

There is a long record of flooding in this target area. Flooding occurred in January 1993, January 1999, December 2006, January and August 2008 and November 2009. In February 2020 a number of homes and roads suffered river flooding. Most recently, flooding was recorded on 12 August 2020 when homes flooded as a result of unprecedented rainfall in the area.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2391	Avoid inappropriate development that increases flood risk in Kinross
Avoid flood risk	2392	Avoid an increase in flood risk by the appropriate management and maintenance of the South Kinross Flood Protection Scheme
Prepare for flooding	2393	Prepare for current flood risk and future flooding as a result of climate change in Kinross
Reduce flood risk	2394	Reduce the risk of river flooding from the South Queich, Gelly Burn and Clash Burn in South Kinross
Reduce flood risk	2395	Reduce the risk of surface water flooding in Kinross

Action ID	Kinross 23901		
Action Type	Flood protection scheme		
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery	2022-2025
Description	<p>The development of the outline design for the South Kinross Flood Protection Scheme will continue and will consider long term flood risk and climate change. The development of the proposals will also be informed by community engagement. The scheme will then progress to the statutory process set out under the Flood Risk Management (Scotland) Act 2009. The detailed design will be completed thereafter.</p> <p>Following completion of the detailed design, the proposed scheme will be procured and will progress to construction.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	As built drawings will be made available to SEPA, for inclusion in the Scottish Flood Defence Asset Database, flood map updates and flood warning scheme updates.
Funding	The South Kinross Flood Protection Scheme will be subject to available capital funding (up to 80% capital grant funding from the Scottish Government with the remaining funding being provided from Perth & Kinross Council's capital programme).
Coordination	The South Kinross Flood Protection Scheme will be coordinated through the Forth Estuary Local Plan District Partnership.

Action ID	Kinross	23902
Action Type	Maintain flood protection scheme	
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery On-going
Description	Once built, Perth and Kinross Council will implement an inspection and maintenance regime for the South Kinross Flood Protection Scheme.	
Funding	The maintenance of flood protection schemes will be subject to funding from Perth and Kinross Council's revenue budget.	
Coordination	Perth & Kinross Council's Roads Maintenance Partnership will maintain any existing flood protection schemes and works through a programme of inspections carried out in accordance with the recommendations set out in the scheme maintenance manuals. Maintenance works will be coordinated with SEPA, NatureScot, landowners and other stakeholders as required.	



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Kinross 23903		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Kinross sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority and SEPA.		

Action ID	Kinross 23904		
Action Type	Surface water management plan		
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery	2024-2026
Description	<p>Perth and Kinross Council will develop a surface water management plan for Kinross. This will improve the understanding of surface water flood risk, and in the longer term look at possible action to manage the risk. The results of the sewer flood risk assessment will be considered. Current and long term flood risk will be considered and if climate</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	change impacts are found to be significant, surface water management will include adaptive planning.
Funding	The surface water management plan will be subject to funding from Perth and Kinross Council's revenue budget.
Coordination	<p>The surface water management plan is programmed to commence in the 2024/25 financial year. Perth and Kinross Council will engage consulting engineers to investigate the surface water flood risk and identify potential options for managing that risk. The surface water management plan will be coordinated through the Forth Estuary Local Plan District Partnership.</p> <p>Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.</p>

Action ID	Kinross 23905		
Action Type	Community engagement		
Action Delivery Lead	Responsible Authorities	Indicative Delivery	On-going
Description	Community engagement will continue in connection with on-going projects and activities. This will include engaging with the community on the development of the flood scheme proposals and the surface water management plan (Action ID's 23901 & 23904).		
Funding	<p>Community engagement activities will be subject to funding from Perth and Kinross Council's revenue budget.</p> <p>Scottish Water is funded by customer charges as set by their economic regulator; all business activities required under this</p>		

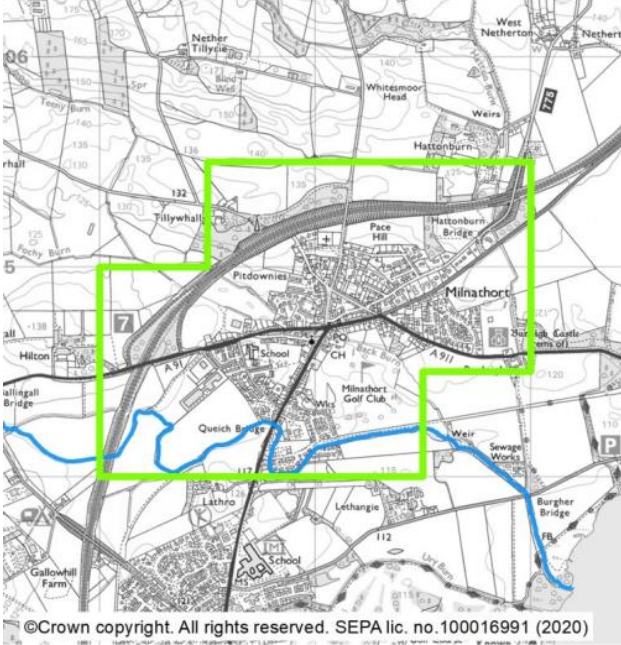
## Flood risk management plans: Forth Estuary Local Plan District (10)

	action by Scottish Water are accounted for in their capital or operational expenditure.
Coordination	Community engagement will take place around any projects and will be coordinated through the Local Plan District Partnership.

Action ID	Kinross 23906		
Action Type	Community resilience group		
Action Delivery Lead	Community	Indicative Delivery	On-going
Description	Perth and Kinross Council will continue to liaise with the Kinross Flood Resilience Group.		
Funding	Funding for Community resilience groups will be provided by private individuals, businesses, organisations, or communities at risk of flooding.		
Coordination	<p>Perth and Kinross Council will work with the Kinross Flood Resilience Group to reduce flood risk, improve preparedness and increase resilience against flooding. The Council will continue to co-ordinate with the Kinross Flood Resilience Group on a priority needs basis where resources allow.</p> <p>The Council will coordinate community resilience groups with any related actions.</p>		

## Local Flood Risk Management plan datasheet

Milnathort (target area 303)

Summary	Location Map
<p>Milnathort is a small town in Perth and Kinross located just north of Kinross. The main source of flooding in Milnathort is river flooding, however there is also a risk of surface water flooding. There are approximately 200 people and 130 properties currently at risk from flooding. This is likely to increase to 300 people and 180 properties by the 2080s due to climate change. A flood protection scheme is in place in the area, protecting homes and businesses to a 1 in 100 year standard of protection.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national assessments of flooding from rivers, surface water and coastal sources. The national assessment for surface water was improved by an on-going surface water management plan, a sewer flood risk assessment and flood study work in support of a proposed surface water flood protection scheme. The national understanding of river flooding was improved by flood study work carried out for the existing Milnathort Flood Protection Scheme on the Back Burn.

There is a long record of flooding in this area. The Back Burn flooded in January 1993, affecting properties in the town centre. In December 2006 a prolonged period of heavy rainfall caused flooding to houses and a local pub, necessitating residents to be evacuated from their homes. The most recent significant flood was recorded in July

## Flood risk management plans: Forth Estuary Local Plan District (10)

2013 when surface water flooded a number of homes and businesses. Since then, smaller scale surface water flooding occurred in 2020 but this did not cause any damage to properties.

Objective	ID	Description
Avoid flood risk	3031	Avoid inappropriate development that increases flood risk in Milnathort
Avoid flood risk	3032	Avoid an increase in flood risk by the appropriate management and maintenance of the flood protection schemes in Milnathort
Prepare for flooding	3033	Prepare for current flood risk and future flooding as a result of climate change in Milnathort
Reduce flood risk	3034	Reduce the risk of surface water in Milnathort

Action ID	Milnathort 30301		
Action Type	Flood protection scheme		
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery	2022-2025
Description	<p>The development of the outline design for the Milnathort Surface Water Flood Protection Scheme will continue and will consider long term flood risk and climate change. The development of the proposals will be informed by community engagement. The scheme will then progress to the statutory process set out under the Flood Risk Management (Scotland) Act. The detailed design will be completed thereafter.</p> <p>Following completion of the detailed design, the proposed scheme will be procured and will progress to construction.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	As built drawings will be made available to SEPA, for inclusion in the Scottish Flood Defence Asset Database, flood map updates and flood warning scheme updates.
Funding	The Milnathort Surface Water Flood Protection Scheme will be subject to available capital funding (up to 80% capital grant funding from the Scottish Government with the remaining funding being provided from Perth & Kinross Council's capital programme).
Coordination	The Milnathort Surface Water Flood Protection Scheme will continue to be coordinated through the Forth Estuary Local Plan District Partnership.

Action ID	Milnathort	30302
Action Type	Maintain flood protection scheme	
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery On-going
Description	<p>Maintenance of the existing Milnathort Flood Protection Schemes (on the Back Burn) will continue in accordance with the inspection and maintenance regime.</p> <p>Maintenance of the new Milnathort Surface Water Flood Protection Scheme will commence once construction of the scheme is complete.</p>	
Funding	The maintenance of flood protection schemes will be subject to funding from Perth and Kinross Council's revenue budget.	
Coordination	Perth & Kinross Council's Roads Maintenance Partnership will maintain any existing flood protection schemes and works through a programme of inspections carried out in accordance with the recommendations set out in the scheme maintenance manuals. Maintenance works will be coordinated with SEPA, SNH,	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	landowners and other stakeholders as required. The maintenance of the flood scheme/works will also be coordinated with related actions.
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Action ID	Milnathort	30303
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2024-2026
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Milnathort sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan.	

Action ID	Milnathort	30304
Action Type	Surface water management plan	
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery 2022-2023
Description	The development of a surface water management plan for Milnathort in on-going. This is being coordinated with the development of the proposed Milnathort Surface Water Flood Protection Scheme (Action ID 30301).	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Current and long term flood risk is being considered and, if climate change impacts are found to be significant, the plan will consider how the area can adapt to increased flood risk in the future.
Funding	The surface water management plan will be subject to funding from Perth and Kinross Council's revenue budget.
Coordination	<p>Work to develop a surface water management plan is on-going. Perth and Kinross Council engaged consulting engineers, Sweco UK Ltd, to investigate the surface water flood risk and identify potential options for managing that risk. The plan/study will be coordinated through the Forth Estuary Local Plan District Partnership.</p> <p>Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.</p>

Action ID	Milnathort	30305	
Action Type	Community engagement		
Action Delivery Lead	Responsible Authorities	Indicative Delivery	On-going
Description	Community engagement will continue in connection with on-going projects and activities. This will include engaging with the community on the development of the flood scheme proposals and the surface water management plan (Action ID's 30301 & 30304).		
Funding	Community engagement activities will be subject to funding from Perth and Kinross Council's revenue budgets. SEPA's community engagement activities are funded by the Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer charges as set by their economic regulator, all business activities required under this action by Scottish Water are accounted for in their capital or operational expenditure.		



<b>Coordination</b>	<p>Community engagement will be coordinated through the Local Plan District partnership between SEPA and the responsible authorities. SEPA and the responsible authorities will use any studies, projects and flood schemes to engage with communities and raise awareness of flood risk.</p> <p>Communications activity will be coordinated through existing arrangements within Local Plan District Partnerships. Information will be disseminated through website, social media and other community engagement activity.</p>
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## 02/10/04 (Kirkcaldy)

This area is designated as a potentially vulnerable area due to flood risk in Buckhaven, East Wemyss, Kirkcaldy and Methil from river, coastal and surface water. There is a long history of flooding in this area, with recent coastal flooding causing flooding of roads and parking and damage to the sea wall.

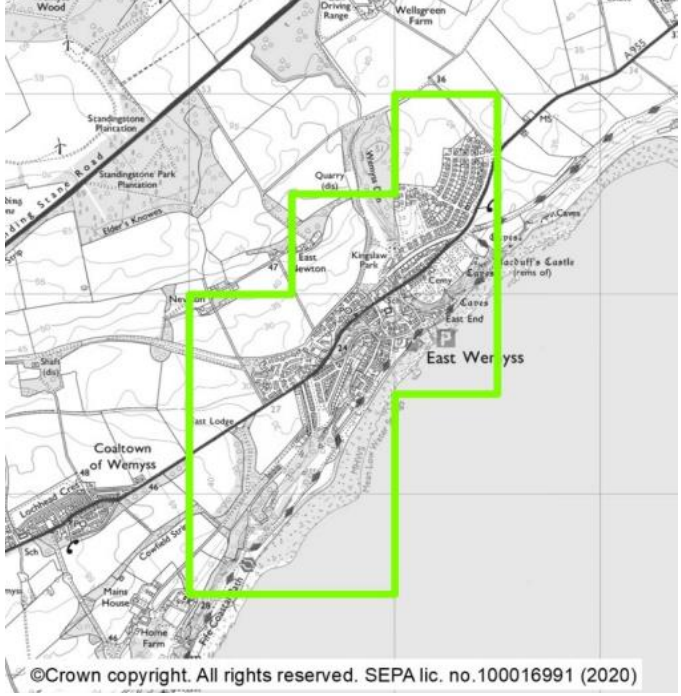
There are 3 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

East Wemyss	(target area 226)
Kirkcaldy	(target area 240)
Methil and Buckhaven	(target area 302)

## Local Flood Risk Management plan datasheet

## East Wemyss (target area 226)

Summary	Location Map
<p>The village of East Wemyss is located on the northern shore of the Firth of Forth in the Fife Council area. The main source of flooding in East Wemyss is river flooding, however there is also a risk from coastal flooding. There are approximately 120 people and 60 homes and businesses currently at risk from flooding. This is estimated to increase to 150 people and 80 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. The national level assessment of coastal and river flooding is the main source of flood risk information in this area. There are periodic records of flooding in this area. A notable flood occurred in October 2012 when river flooding inundated roads, houses, businesses and agricultural land. More recently in October 2019 heavy rain flooded roads.

## Flood risk management plans: Forth Estuary Local Plan District (10)

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	2261	Avoid inappropriate development that increases flood risk in East Wemyss
Avoid flood risk	2262	Avoid an increase in flood risk by the appropriate management and maintenance of coastal defences along the coast at East Wemyss
Improve data and understanding	2263	Improve data and understanding of coastal defences scheme in East Wemyss
Prepare for flooding	2264	Prepare for current flood risk and future flooding as a result of climate change in East Wemyss
Reduce flood risk	2265	Reduce the risk of river flooding in East Wemyss

Action ID	East Wemyss 22601		
Action Type	Flood study		
Action Delivery Lead	Fife Council	Indicative Delivery	Completed financial year 2022-23
Description	The cycle 1 flood study should be completed as planned. The study is to include flood modelling and high level appraisal of actions. Current and long term flood risk should be considered and the outputs used to inform the development of an adaptation plan.		
Funding	Fife Council Revenue		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.
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Action ID	East Wemyss	22602
Action Type	Community engagement	
Action Delivery Lead	Fife Council	Indicative Delivery Ongoing
Description	Community engagement should be carried out based on the findings of the flood studies in the area.	
Funding	Fife Council Revenue	
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.	

Action ID	East Wemyss	22603
Action Type	Flood defence maintenance	
Action Delivery Lead	Fife Council	Indicative Delivery Ongoing
Description	Fife Council should continue to maintain the existing coastal defences in their ownership.	
Funding	Fife Council Revenue	
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.	

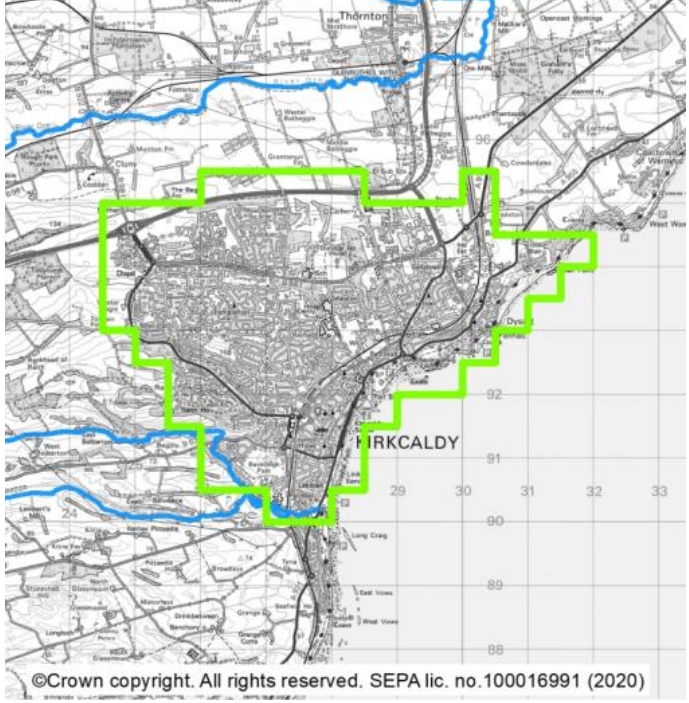
## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	East Wemyss 22604		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

Action ID	East Wemyss 22605		
Action Type	Adaptation plan		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	A climate change adaptation plan should be developed in relation to management of the existing defences owned by Fife Council. This is proposed as a long-term action covering the Fife Council area.		
Funding	Fife Council		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

## Local Flood Risk Management plan datasheet

Kirkcaldy (target area 240)

Summary	Location Map
<p>Kirkcaldy is located on the northern shore of the Firth of Forth within the Fife Council area. The main source of flooding is from surface water, however there is also risk of river and coastal flooding. There are approximately 1,900 people and 1,310 homes and businesses currently at risk from flooding. This is estimated to increase to 3,200 people and 2,000 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river and coastal flooding is improved by the Linktown (Kirkcaldy) Flood Study completed in 2019. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. There is a long record of flooding in this area with many floods recorded. A notable flood occurred in April 1958 when Kirkcaldy suffered significant

coastal flooding which inundated homes and businesses. In August 2020 west Fife was subject to severe disruption from extreme rainfall which caused disruption to many communities, property damage and impacts to the roads network including in Kirkcaldy.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	2401	Avoid inappropriate development that increases flood risk in Kirkcaldy
Avoid flood risk	2402	Avoid an increase in flood risk by the appropriate management and maintenance of coastal defences along the coast at Kirkcaldy
Improve data and understanding	2403	Improve data and understanding of coastal defences scheme in Kirkcaldy
Prepare for flooding	2404	Prepare for current flood risk and/or future flooding as a result of climate change in Kirkcaldy
Reduce flood risk	2405	Reduce the risk of surface water flooding in Kirkcaldy
Reduce flood risk	2406	Reduce the risk of river flooding in Kirkcaldy



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Kirkcaldy 24001		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Fife Council	Indicative Delivery	Cycle 2
Description	A flood study carried out in 2019 recommended that there is no economically viable flood scheme to protect against low frequency floods. The local authority is to explore whether a solution offering a lower standard of protection would be acceptable.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

Action ID	Kirkcaldy 24002		
Action Type	Flood defence maintenance		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Defences in the area are a combination of local authority and privately owned defences. Defences owned by Fife Council (from Tiel Burn to Williamsons Quay) should continue to be inspected and maintained by the council.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Kirkcaldy 24003		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Kirkcaldy sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority and SEPA.		

Action ID	Kirkcaldy 24004		
Action Type	Surface water management plan		
Action Delivery Lead	Fife Council	Indicative Delivery	To be completed early in FRM Cycle 2
Description	Fife Council should continue to develop the surface water management plan for Kirkcaldy. This will improve understand surface water flood risk and mechanisms, and in the longer		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	term look at possible action to manage the risk. The results of the sewer flood risk assessment should be considered. Current and long term flood risk should be considered and if climate change impacts are found to be significant, surface water management should be included in the adaptation plan. Kirkcaldy is a Scottish Water priority area and opportunities to work jointly should be explored.
Funding	Fife Council Revenue
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.

Action ID	Kirkcaldy	24005
Action Type	Strategic mapping improvements	
Action Delivery Lead	SEPA	Indicative Delivery 2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.	

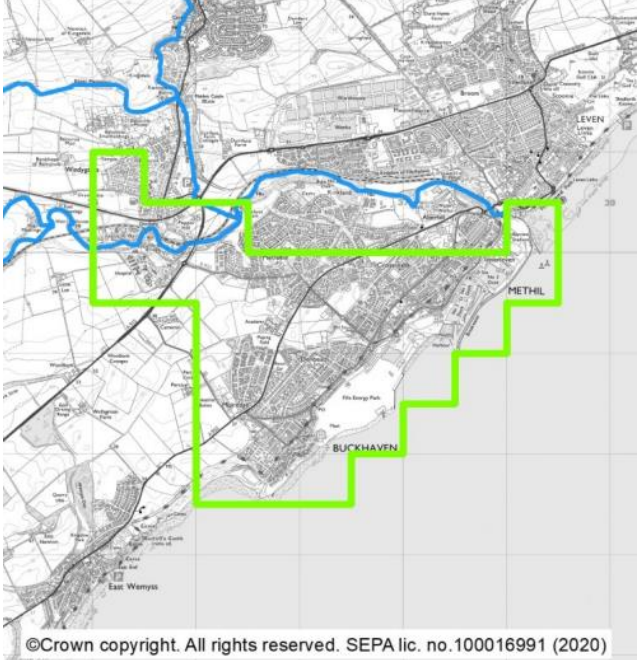
## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Kirkcaldy 24006		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.		

Action ID	Kirkcaldy 24007		
Action Type	Adaptation plan		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	A climate change adaptation plan should be developed in relation to management of the existing defences owned by Fife Council. This is proposed as a long-term action covering the Fife Council area.		
Funding	Fife Council		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

## Local Flood Risk Management plan datasheet

Methil and Buckhaven (target area 302)

Summary	Location Map
<p>The towns of Methil and Buckhaven are located on the east coast of Scotland in the Fife Council area. The main source of flooding in Methil and Buckhaven is surface water and coastal flooding. River flood risk is also recorded in the area, which mainly affects businesses and is therefore not considered further in the analysis. There are approximately 530 people and 420 properties at risk from flooding. This is estimated to increase to 900 people and 620 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by the Leven Valley Integrated Catchment Study. There are limited records of flooding in this area.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3021	Avoid inappropriate development that increases flood risk in Methil and Buckhaven
Avoid flood risk	3022	Avoid an increase in flood risk by the appropriate management and maintenance of coastal defences along the coast at Methil
Prepare for flooding	3023	Prepare for current flood risk and future flooding as a result of climate change in Methil and Buckhaven
Reduce flood risk	3024	Reduce the risk of surface water flooding in Methil and Buckhaven

Action ID	Methil and Buckhaven 30201		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Leven Valley sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	Funding for this action is secured within Scottish Water's business plan.
Coordination	Action delivery lead is Scottish Water in coordination with the local authority and SEPA.

Action ID	Methil and Buckhaven 30202		
Action Type	Surface water management plan		
Action Delivery Lead	Fife Council	Indicative Delivery	To be completed early in FRM Cycle 2.
Description	Development of the surface water management plan should continue based on the findings of the integrated catchments study and sewer flood risk assessment. Current and long term flood risk should be considered.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.		

Action ID	Methil and Buckhaven 30203		
Action Type	Community engagement		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Community engagement should be carried out based on the findings of the flood studies in the area.		
Funding	Fife Council		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.
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Action ID	Methil and Buckhaven	30204
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	

Action ID	Methil and Buckhaven	30205
Action Type	Flood defence maintenance	
Action Delivery Lead	Fife Council	Indicative Delivery Ongoing
Description	The local authority should continue to maintain the existing coastal defences in their ownership that reduce coastal flood risk to the communities.	
Funding	Fife Council Revenue	
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.	



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Methil and Buckhaven			30206
Action Type	Adaptation plan			
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2	
Description	A climate change adaptation plan should be developed in relation to management of the existing defences owned by Fife Council. This is proposed as a long-term action covering the Fife Council area.			
Funding	Fife Council			
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.			

## 02/10/05 (Cardenden and Cowdenbeath)

This area is designated as a potentially vulnerable area due to flood risk at Cardenden and Cowdenbeath. The main source of flooding is surface water and river flooding from the River Ore and its tributaries. There have been a number of reports of river and surface water floods affecting these communities, including recent floods in August 2020 from the Den Burn.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

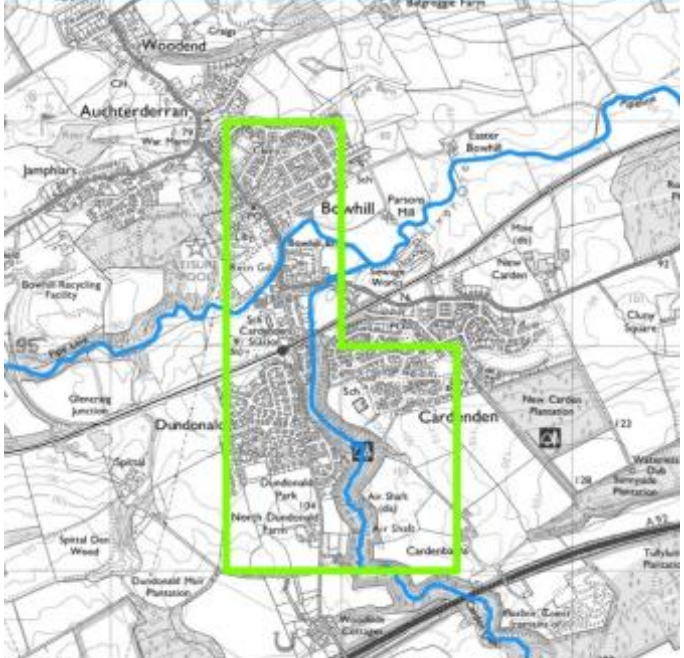
### List of target areas

Cardenden (target area 209)

Cowdenbeath (target area 215)

## Local Flood Risk Management plan datasheet

Cardenden (target area 209)

Summary	Location Map
<p>Cardenden is located 5km west of Kirkcaldy in the Fife Council area. The main source of flooding is river flooding, including River Ore and small watercourses. There are approximately 290 people and 160 homes and businesses currently at risk from flooding. This is estimated to increase to 310 people and 170 homes and businesses by the 2080s due to climate change.</p>	 <p>©Crown copyright. All rights reserved. SEPA lic. no.100016991 (2020)</p>

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding is improved by the Cardenden Flood Study completed in 2020. There is a long record of flooding in this area, with the first flood recorded in April 1998 when the River Ore burst its banks flooding Wallsgreen Park. Recently in August 2020, flooding from the Den Burn affected around 20 homes in Cardenden following heavy rainfall.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2091	Avoid inappropriate development that increases flood risk in Cardenden
Prepare for flooding	2092	Prepare for current flood risk and future flooding as a result of climate change in Cardenden
Reduce flood risk	2093	Reduce the risk of river flooding from the River Ore and small watercourses in Cardenden

#### Coordination with the River Basin Management Team

This area has been identified as having potential for restoration in Scotland's River basin management plan. Actions should be coordinated to deliver any potential joint objectives for restoration and flood risk management. This should be considered in the earliest stages of any projects.

Action ID	Cardenden 20901		
Action Type	Flood scheme or works design		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	<p>The flood study for Cardenden has concluded and recommended a scheme. The preferred scheme comprises of:</p> <ol style="list-style-type: none"> <li>1. Bridge replacement to increase its capacity.</li> <li>2. Widening of the channel at Cardenden Bridge, so that more flow can be passed under the bridge structure without water backing up.</li> </ol>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>3. Provision of a 2 stage channel upstream of the bridge, to increase the capacity of the open channel, so that the adjacent properties do not flood.</p> <p>4. Lowering of the channel bed, so that water level in the vicinity of the bridge and upstream can be lowered to reduce flooding risk and increase freeboard under the bridge.</p> <p>5. Flood embankments and/or walls.</p> <p>The preferred option is to be taken to detailed design. The delivery of this action is subject to funding being made available.</p>
Funding	Fife Council Revenue
Coordination	SEPA will work with the local authority on the potential to coordinate this action with flood warning actions.

Action ID	Cardenden	20902
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Fife Council	Indicative Delivery FRM Cycle 2
Description	<p>The flood scheme/works is to be built following agreement of the design, costs and timescales.</p> <p>The responsible authority proposes this action as the best viable option for managing flood risk in this community. The delivery of this action is subject to capital funding being made available.</p> <p>Fife Council should progress the formal process of implementing a flood protection scheme for Cardenden. Upon completion of the scheme Fife Council should submit all as built and scheme information</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	to SEPA for registration on the Scottish Flood Defence Asset Database.
Funding	Scottish Government Capital fund with match funding from Fife Council per FRM agreement
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD and flood warning actions.

Action ID	Cardenden	20903
Action Type	Flood warning scoping	
Action Delivery Lead	SEPA	Indicative Delivery First half of Cycle
Description	The potential to provide a new flood warning scheme is to be considered by SEPA. Flood warnings are only effective where it is possible to send a warning message with sufficient time to allow communities to take appropriate actions before flooding occurs. Following completion, the flood study will be reviewed to determine if further flood warning investigation is necessary.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with Fife Council on the potential to coordinate flood warning development with the flood study investigation.	

Action ID	Cardenden	20904
Action Type	Community engagement	
Action Delivery Lead	Action delivery lead is Fife Council in	Indicative Delivery Ongoing

## Flood risk management plans: Forth Estuary Local Plan District (10)

	coordination with the responsible authorities and the Scottish Flood Forum.		
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.  Community engagement should be carried out based on the findings of the flood studies in the area.		
Funding	N/A		
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.		

Action ID	Cardenden	20905	
Action Type	Community resilience group		
Action Delivery Lead	Community	Indicative Delivery	Ongoing
Description	The group of community volunteers work to prepare and put in practice their Community Resilience Plan and be supported by the local authority.  The local authority should continue to support Cardenden Flood Forum and its activities.		
Funding	N/A		
Coordination	Action delivery lead is the community and coordination will be determined once the actions have been finalised.		

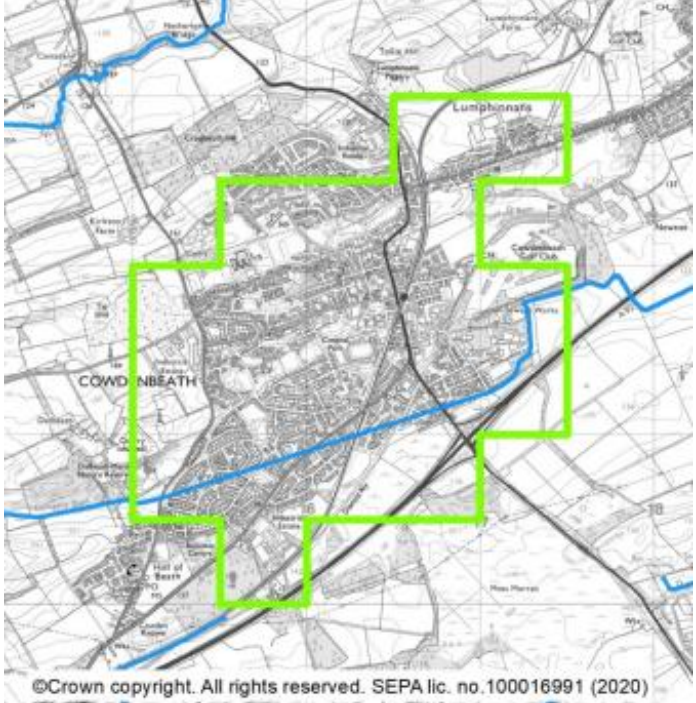
## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Cardenden 20906		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Leven Valley sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority and SEPA.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA</p>		



## Local Flood Risk Management plan datasheet

Cowdenbeath (target area 215)

Summary	Location Map
<p>The town of Cowdenbeath is located a few kilometres north east of Dunfermline in Fife. The main source of flooding in Cowdenbeath is surface water, however there is also risk from river flooding. There are approximately 560 people and 360 homes and businesses currently at risk from flooding. This is estimated to rise to 700 people and 450 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study for Leven Valley and a sewer flood risk assessment. There are periodic records of flooding in this area.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2151	Avoid inappropriate development that increases flood risk in Cowdenbeath
Prepare for flooding	2152	Prepare for current flood risk and future flooding as a result of climate change in Cowdenbeath
Reduce flood risk	2153	Reduce the risk of river flooding from the Lochgelly Burn in Cowdenbeath
Reduce flood risk	2154	Reduce the risk of surface water flooding in Cowdenbeath

Action ID	Cowdenbeath 21501		
Action Type	Flood study		
Action Delivery Lead	Fife Council	Indicative Delivery	Programmed completion July 23 as Flood Study with integrated SWMP
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The flood study for Cowdenbeath is due to start by December 2021. Development of the flood study should continue as planned.</p>		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Cowdenbeath 21502		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Leven Valley sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities.</p>		

Action ID	Cowdenbeath 21503		
Action Type	Surface water management plan		
Action Delivery Lead	Fife Council	Indicative Delivery	Programmed completion July 23 as Flood Study with integrated SWMP

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	The development and implementation of a surface water management plan for Cowdenbeath should continue as planned.
Funding	Fife Council Revenue
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.

Action ID	Cowdenbeath 21504		
Action Type	Community engagement		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk. Community engagement should be carried out based on the findings of the flood studies in the area.		
Funding	Fife Council		
Coordination	Community engagement should be carried out based on the findings of the flood studies in the area.		

## 02/10/06 (Inverkeithing, Rosyth and Dunfermline)

This area is designated as a potentially vulnerable area due to flood risk to Crossford, Dunfermline, Inverkeithing and Rosyth from coastal, river, and surface water flooding. The main risk comes from surface water and river flooding. There is a long history of flooding in this area, with recent surface water flooding affecting homes and roads across this area in August 2019, and further surface water flooding in Rosyth in January, February and August 2020.

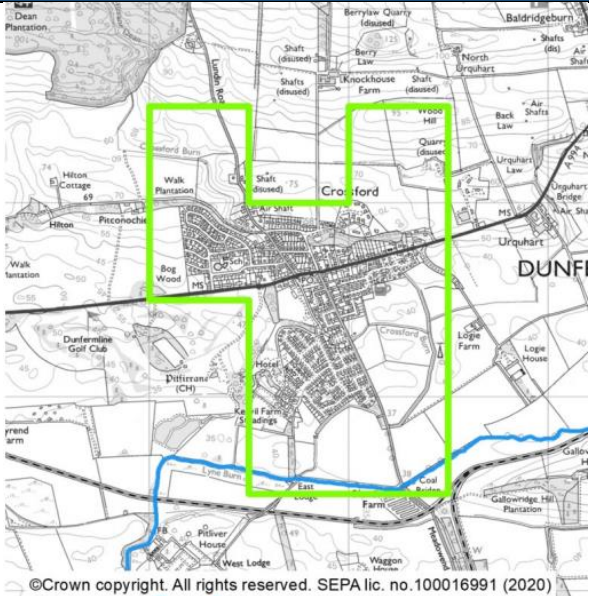
There are 4 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Crossford	(target area 217)
Dunfermline	(target area 224)
Inverkeithing	(target area 236)
Rosyth	(target area 312)

Local Flood Risk Management plan datasheet

Crossford (target area 217)

Summary	Location Map
<p>Crossford lies west of Dunfermline and within the Fife Council area. The main source of flooding in Crossford is surface water and there is limited risk from river flooding. There are approximately 250 people and 120 homes and businesses currently at risk from flooding. This is likely to increase to 270 people and 140 homes and businesses by the 2080s due to climate change.</p>	

What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are limited records of flooding in this area.

Objective	ID	Description
Avoid flood risk	2171	Avoid inappropriate development that increases flood risk in Crossford

## Flood risk management plans: Forth Estuary Local Plan District (10)

Prepare for flooding	2172	Prepare for current flood risk and future flooding as a result of climate change in Crossford
Reduce flood risk	2173	Reduce the risk of surface water flooding in Crossford

Action ID	Crossford 21701		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	Cycle 2
Description	Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Iron Mill Bay sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.		
Funding	Not yet confirmed		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

Action ID	Crossford 21702		
Action Type	Surface water management plan		
Action Delivery Lead	Fife Council	Indicative Delivery	To be completed early in FRM Cycle 2
Description	A surface water management plan should be drawn up for Crossford following the outcomes of the integrated catchment study to address more local surface water flooding issues.		
Funding	Fife Council Revenue		

## Flood risk management plans: Forth Estuary Local Plan District (10)

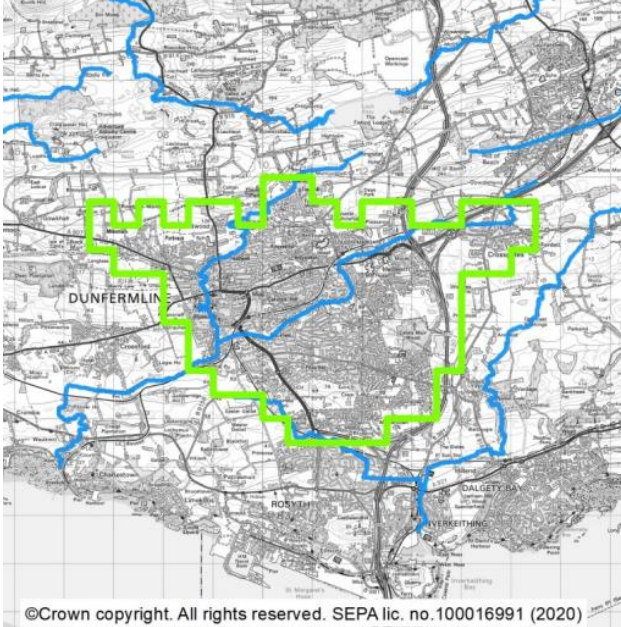
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.
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Action ID	Crossford	21703
Action Type	Community engagement	
Action Delivery Lead	Fife Council	Indicative Delivery Ongoing
Description	Community engagement should be carried out based on the findings of the flood studies in the area.	
Funding	Fife Council	
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.	



## Local Flood Risk Management plan datasheet

Dunfermline (target area 224)

Summary	Location Map
<p>The town of Dunfermline is located 5km from the northern shore of the Firth of Forth, within the Fife Council area. The main sources of flooding in Dunfermline are river and surface water. There are approximately 2,500 people and 1,400 homes and businesses currently at risk from flooding. This is likely to increase to 3,100 people and 1,700 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding is improved by a flood study for Dunfermline which includes the Lyne Burn and the Tower Burn. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There is a long record of flooding in this area, with recent flooding recorded in 2019.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2241	Avoid inappropriate development that increases flood risk in Dunfermline
Avoid flood risk	2242	Avoid an increase in flood risk by the appropriate management and maintenance of the Dunfermline Flood Protection Scheme in the south west of the town and Parkneuk Flood Protection Scheme
Prepare for flooding	2243	Prepare for current flood risk and future flooding as a result of climate change in Dunfermline
Reduce flood risk	2244	Reduce the risk of river flooding from the Lyne Burn and Tower Burn in Dunfermline
Reduce flood risk	2245	Reduce the risk of surface water flooding in Dunfermline

Action ID	Dunfermline 22401		
Action Type	Flood study		
Action Delivery Lead	Fife Council	Indicative Delivery	Completed financial year 2021-22
Description	The flood protection study should be completed as planned. There is an ongoing restoration project on the Lyne Burn which should be coordinated with the study as far as possible. Current and long term flood risk should be considered and how the existing flood defences and the area will adapt to changes in flood risk due to climate change.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordinated with the Water Environment Fund, Lyne Burn restoration project.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	SEPA will work with the local authority on the potential to coordinate this action with the Lyne Burn WEF project.
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Action ID	Dunfermline	22402
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Dunfermline and Iron Mill Bay sewer catchments in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan	
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.	

Action ID	Dunfermline	22403
Action Type	Surface water management plan	
Action Delivery Lead	Fife Council	Indicative Delivery To be completed early in FRM Cycle 2.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	A surface water management plan for Dunfermline should be drawn up following the outcomes of the integrated catchment study to address more local surface water flooding issues.
Funding	Fife Council Revenue
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.

Action ID	Dunfermline	22404
Action Type	Community engagement	
Action Delivery Lead	Fife Council	Indicative Delivery Ongoing
Description	Community engagement should be carried out based on the findings of the flood studies in the area.	
Funding	Fife Council	
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.	

Action ID	Dunfermline	22405
Action Type	Flood defence maintenance	
Action Delivery Lead	Fife Council	Indicative Delivery Ongoing
Description	Fife Council should continue to maintain the existing flood defences in Dunfermline. Development of or updates to any existing maintenance regime to be made based on the findings of the flood studies.	

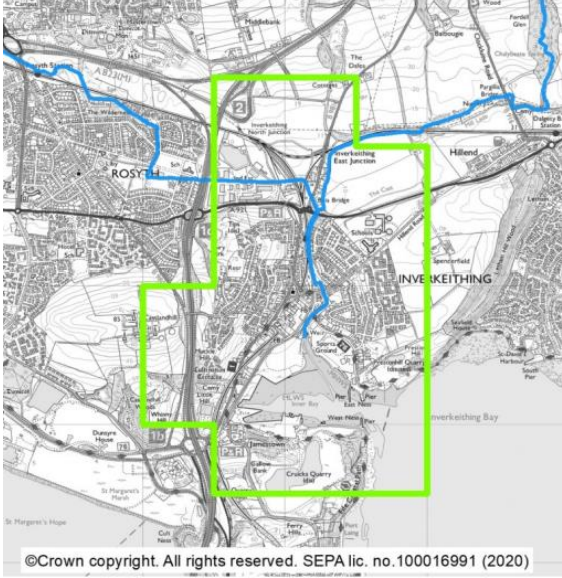
## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	Fife Council Revenue
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.

Action ID	Dunfermline	22406
Action Type	Adaptation plan	
Action Delivery Lead	Fife Council	Indicative Delivery FRM Cycle 2
Description	A climate change adaptation plan should be developed in relation to management of the existing defences owned by Fife Council. This is proposed as a long-term action covering the Fife Council area.	
Funding	Fife Council	
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.	

## Local Flood Risk Management plan datasheet

Inverkeithing (target area 236)

Summary	Location Map
<p>Inverkeithing is located on the northern shore of the Firth of Forth in Fife. The main source of flooding to Inverkeithing is river flooding, however there is also risk from coastal and surface water flooding. There are approximately 80 people and 90 homes and businesses at risk from flooding. This is likely to increase to 90 people and 110 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is the main source of flood risk information in this area. There is a long record of flooding in this area. A notable flood occurred in April 1992 causing the Keithing Burn to burst its banks flooding roads, gardens, out-buildings, fields, building yards, public parks, the basement of a primary school and part of the railway line. A recent flood occurred in August 2020 when the severe rainfall caused disruption to the community, property damage and impacts on the roads network.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2361	Avoid inappropriate development that increases flood risk in Inverkeithing
Prepare for flooding	2362	Prepare for current flood risk and future flooding as a result of climate change in Inverkeithing

Action ID	Inverkeithing 23601		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.		

Action ID	Inverkeithing 23602		
Action Type	Flood defence maintenance		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Fife Council should continue to maintain the existing coastal defences. The existing coastal defences are a mix of local authority owned flood defences such as the main rock revetment and privately owned defences which are the responsibility of the private owners.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	Fife Council Revenue
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.

Action ID	Inverkeithing	23603
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Dunfermline sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan.	
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.	



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Inverkeithing	23604	
Action Type	Adaptation plan		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	A climate change adaptation plan should be developed in relation to management of the existing defences owned by Fife Council. This is proposed as a long-term action covering the Fife Council area.		
Funding	Fife Council		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

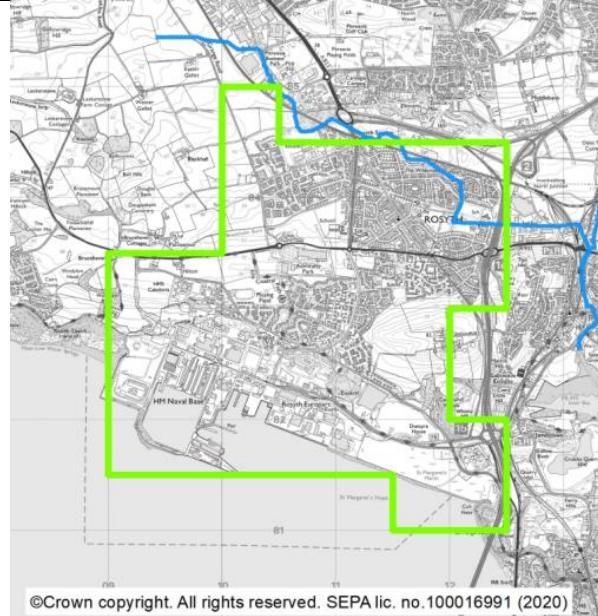
Local Flood Risk Management plan datasheet

Rosyth (target area 312)

Summary

Rosyth is located on the north shore of the Firth of Forth, within the Fife Council area. The main source of flooding in Rosyth is surface water, and there is also some risk from river and coastal flooding. There are approximately 610 people and 380 homes and businesses currently at risk from flooding. This is likely to increase to 800 people and 500 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are frequent records of flooding in this area, mostly associated with surface water flooding. Recent floods were recorded in January, February and August of 2020 when heavy rain caused flooding to roads, gardens and homes in Rosyth.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3121	Avoid inappropriate development that increases flood risk in Rosyth
Improve data and understanding	3122	Improve data and understanding of surface water flooding in Rosyth
Prepare for flooding	3123	Prepare for current flood risk and future flooding as a result of climate change in Rosyth
Reduce flood risk	3124	Reduce the risk of surface water flooding in Rosyth

Action ID	Rosyth 31201		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Scottish Water	Indicative Delivery	Cycle 2
Description	Scottish Water will lead on a study to look at potential options to manage sewer flooding in the Park Road area of Rosyth, with coordination from Fife Council.		
Funding	Not yet confirmed		
Coordination	Action delivery lead is Scottish Water in coordination with Fife Council and other actions in the area.		

Action ID	Rosyth 31202		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Dunfermline sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	Funding for this action is secured within Scottish Water's business plan.
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.

Action ID	Rosyth	31203
Action Type	Surface water management plan	
Action Delivery Lead	Fife Council	Indicative Delivery To be completed early in FRM Cycle 2
Description	Fife Council should progress a surface water management plan, informed by the outcomes of the integrated catchment study.	
Funding	Fife Council Revenue	
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Rosyth 31204		
Action Type	Community engagement		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Community engagement should be carried out based on the findings of the flood studies in the area.		
Funding	Fife Council		
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.		

Action ID	Rosyth 31205		
Action Type	Flood defence maintenance		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Asset owners should continue to maintain coastal defences in the Rosyth area.		
Funding	Fife Council Revenue		
Coordination	Action delivery leads are Fife Council and the asset owner. Coordination will be determined once the actions have been finalised.		

Action ID	Rosyth 31206		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.

## 02/10/07 (Cairneyhill)

This area is designated as a potentially vulnerable area due to flood risk to Cairneyhill and Torryburn from coastal, river and surface water. The main source of flooding in Cairneyhill is river flooding and surface water whilst in Torryburn the main source is coastal. There is a history of flooding in this area, particularly in Cairneyhill, including recent flooding of properties and roads from the Torry Burn.


There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Cairneyhill	(target area 207)
Torryburn	(target area 318)

## Local Flood Risk Management plan datasheet

## Cairneyhill (target area 207)

Summary	Location Map
<p>Cairneyhill is a small village in west Fife. The main sources of flooding in Cairneyhill are river and surface water flooding. There are approximately 520 people and 270 homes and businesses currently at risk from flooding. This is likely to increase to 620 people and 320 homes and businesses by the 2080s due to climate change.</p>	 <p>©Crown copyright. All rights reserved. SEPA lic. no.100016991 (2020)</p>

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study, a sewer flood risk assessment and a surface water management plan. There is a long record of flooding in this area, including a recent flood in August 2020 when roads, playgrounds and playing fields were flooded. The Cairneyhill Flood Prevention Scheme provides some protection against river flooding from the Torry Burn.



## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2071	Avoid inappropriate development that increases flood risk in Cairneyhill
Avoid flood risk	2072	Avoid an increase in flood risk by the appropriate management and maintenance of the Cairneyhill Flood Protection Scheme
Improve data and understanding	2073	Improve data and understanding of river flooding in Cairneyhill
Prepare for flooding	2074	Prepare for current flood risk and future flooding as a result of climate change in Cairneyhill
Reduce flood risk	2075	Reduce the risk of river flooding from the Torry Burn in Cairneyhill
Reduce flood risk	2076	Reduce the risk of surface water flooding in Cairneyhill

Action ID	Cairneyhill 20701		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	Cairneyhill Flood Study should be developed further through options appraisal and public consultation to confirm the preferred option to manage flood risk.		
Funding	Fife Council Revenue		
Coordination	Fife Council		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Cairneyhill 20702		
Action Type	Flood scheme or works design		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	The preferred scheme is to be taken to detailed design. This should include consideration of the impacts of climate change on scheme performance. An adaptation plan may need to be developed to address changes of flood risk due to climate change. The delivery of this action is subject to funding being made available.		
Funding	Fife Council Revenue		
Coordination	Fife Council		

Action ID	Cairneyhill 20703		
Action Type	Flood defence maintenance		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Maintenance to the Cairneyhill Flood Protection Scheme should continue and updates to the maintenance regime be made based on the findings of the flood study and adaptation plan.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Cairneyhill 20704		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Iron Mill Bay sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

Action ID	Cairneyhill 20705		
Action Type	Surface water management plan		
Action Delivery Lead	Fife Council	Indicative Delivery	To be completed early in FRM Cycle 2
Description	Development of the surface water management plan should continue based on the findings of the integrated catchment study. The integrated catchment study and Scottish Water's sewer flood risk assessment should be reviewed to ascertain any requirements		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	of the surface water management plan. Current and long term flood risk should be considered and how the area will adapt to changes in flood risk due to climate change.
Funding	Fife Council Revenue
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.

Action ID	Cairneyhill	20706
Action Type	Community engagement	
Action Delivery Lead	Fife Council	Indicative Delivery Ongoing. Public meeting Mon 21 Nov 22
Description	Community engagement should be carried out based on the findings of the flood studies in the area.	
Funding	Fife Council	
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.	

Action ID	Cairneyhill	20707
Action Type	Adaptation plan	
Action Delivery Lead	Fife Council	Indicative Delivery FRM Cycle 2
Description	Information on climate change is to be used to develop an adaptation plan to allow for the impacts of climate change to be monitored, understood and managed.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	Fife Council
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.

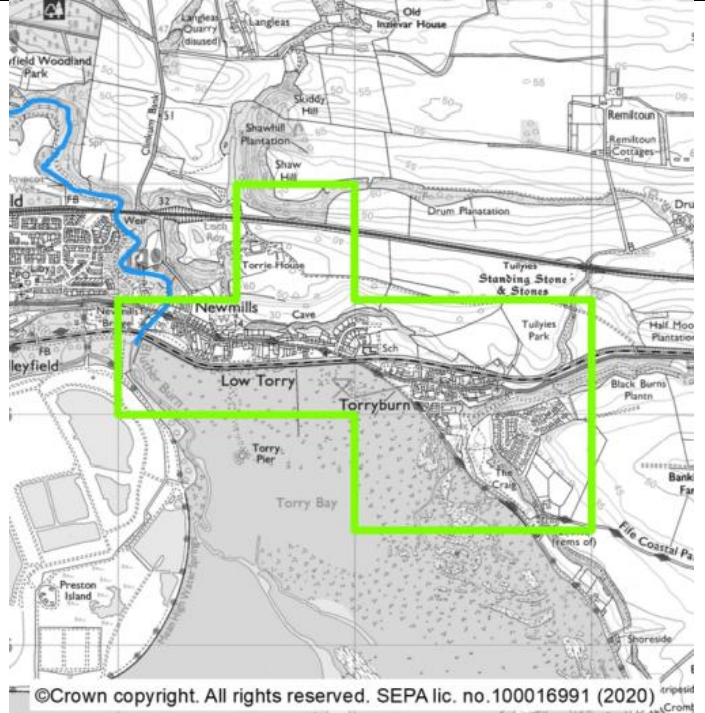
Local Flood Risk Management plan datasheet

Torryburn (target area 318)

Summary

The village of Torryburn is located on the northern shore of the Firth of Forth, in the Fife Council area. The main source of flooding is coastal flooding, which is thought to be underestimated on SEPA's flood maps. There is also lower risk of river and surface water flooding. There are approximately 150 people and 80 homes and businesses currently at risk from flooding. This is estimated to increase to 200 people and 110 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river and coastal flooding is improved by a flood study for Cairneyhill, which includes a coastal study for Torryburn. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. There are limited records of flooding in this area.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3181	Avoid inappropriate development that increases flood risk in Torryburn
Avoid flood risk	3182	Avoid an increase in flood risk by the appropriate management and maintenance of flood defences along the coast in Torryburn
Prepare for flooding	3183	Prepare for current flood risk and future flooding as a result of climate change in Torryburn
Reduce flood risk	3184	Reduce the risk of coastal flooding in Torryburn

Action ID	Torryburn 31801		
Action Type	Flood study		
Action Delivery Lead	Fife Council	Indicative Delivery	Completed in FRM Cycle 1.
Description	The ongoing coastal natural flood management study for Torryburn should be completed as planned. The study considers the impacts of climate change on flood risk. Should climate change be found to be significant this information should be taken forward to develop an adaptation plan and to update the existing shoreline management plan.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.  SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Torryburn 31802		
Action Type	Shoreline management plan (coastal adaptive plan)		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	A shoreline management plan has been produced for this area by Fife Council. The plan is now operational and no review is planned in the short term. In the longer term the plan will be reviewed with the latest data and adaptive approaches considered in relation to the impacts of climate change.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised  SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping.		

Action ID	Torryburn 31803		
Action Type	Community engagement		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Community engagement should be carried out based on the findings of the flood studies in the area.		
Funding	Fife Council		
Coordination	Action delivery lead is Fife Council in coordination with the responsible authorities and the Scottish Flood Forum.		



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Torryburn 31804		
Action Type	Flood defence maintenance		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Asset owners should continue to maintain the existing coastal defences.		
Funding	Fife Council Revenue		
Coordination	Action delivery leads are Fife Council and the asset owner. Coordination will be determined once the actions have been finalised.		

Action ID	Torryburn 31805		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies investigations and flood scheme works. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Torryburn 31806		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

## 02/10/08 (Airth)

This area is designated as a potentially vulnerable area due to coastal flood risk to the Airth area. Coastal flooding of land and damage to flood defences and the water treatment works has been recorded.


There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Airth (target area 185)

## Local Flood Risk Management plan datasheet

Airth (target area 185)

Summary	Location Map
<p>Airth is a village located 7km north of Falkirk, on the south bank of the River Forth. The main source of flooding to Airth is coastal flooding, however, some surface water flooding has also been recorded in the area. There are approximately 270 people and 140 homes and businesses currently at risk from flooding. This is estimated to increase to 290 people and 150 homes and businesses by the 2080s due to climate change. A feasibility report to consider options for progressing a flood protection scheme was completed in May 2017.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for coastal flooding has been improved by the coastal flood study for Airth completed in 2017. There are records of flooding for this area from coastal and surface water sources, with recent surface water flooding recorded in December 2019.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	1851	Avoid inappropriate development that increases flood risk in Airth
Prepare for flooding	1852	Prepare for current flood risk and future flooding as a result of climate change in Airth
Reduce flood risk	1853	Reduce the risk of coastal flooding in Airth

Action ID	Airth 18501		
Action Type	Adaptation plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	A climate change adaptation plan will be developed to allow for the likely impacts of climate change to be better understood. Future changes are to be monitored and where possible managed. Initially this should include an investigation into how the new climate change projections affect coastal flood risk in the area.		
Funding	Falkirk Council Revenue Budget		
Coordination	Falkirk Council will appoint a Consultant to assist with the delivery of this project. Falkirk Council will liaise with SEPA, responsible authorities, landowners and other agencies where required.		

Action ID	Airth 18502		
Action Type	Community engagement		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Ongoing

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.
Funding	To be identified depending on actions
Coordination	Responsible authorities will work in coordination with the Scottish Flood Forum.

Action ID	Airth	18503
Action Type	Strategic mapping improvements	
Action Delivery Lead	SEPA	Indicative Delivery 2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.	

Action ID	Airth	18504
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery Second half of cycle

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.

## 02/10/09 (Kincardine and Culross)

This area is designated as a potentially vulnerable area due to flood risk to Kincardine and Culross. The main source of flooding is coastal from the Firth of Forth and surface water and there is also risk of river flooding in Kincardine. There are a few records of flooding in this area, with the most recent flooding occurring in Culross in 2019 and 2020 from surface water.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Culross (target area 234)

Kincardine (target area 237)



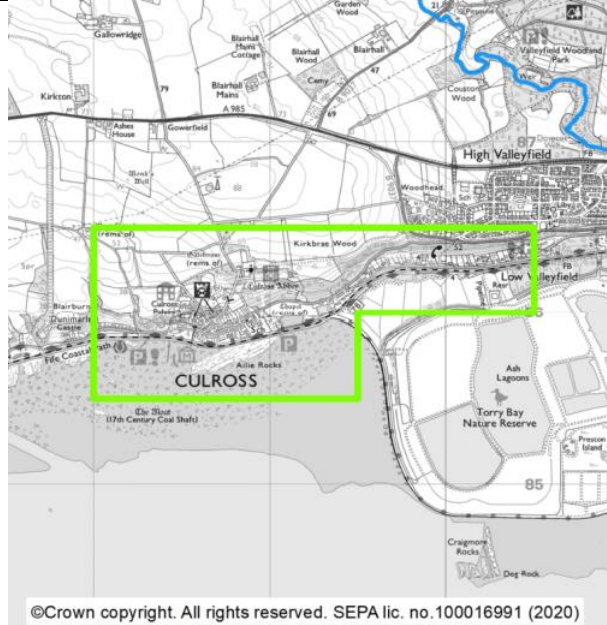
Local Flood Risk Management plan datasheet

Culross (target area 234)

Summary

The village of Culross is located along the northern shore of the Firth of Forth within the Fife Council area. The main source of flooding in Culross is coastal flooding, however there is also a risk from surface water flooding. There are approximately 250 people and 150 homes and businesses currently at risk from flooding. This is likely to increase to 330 people and 190 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for coastal flooding is improved by the Kincardine and Culross Flood Study completed in 2019, and the Fife Shoreline Management Plan. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. Recent floods were recorded in August 2019 and August 2020. A significant quantity of surface water run-off was noted from the fields to the north of Culross affecting

## Flood risk management plans: Forth Estuary Local Plan District (10)

infrastructure, homes and businesses, mainly at lower locations of Culross such as Low Causeway, Main Street, and Balgownie West.

Objective	ID	Description
Avoid flood risk	2341	Avoid inappropriate development that increases flood risk in Culross
Prepare for flooding	2342	Prepare for current flood risk and future flooding as a result of climate change in Culross
Reduce flood risk	2343	Reduce the risk of coastal flooding in Culross
Reduce flood risk	2344	Reduce the risk of surface water flooding

Action ID	Culross 23401		
Action Type	Flood scheme or works design		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	<p>"The Kincardine and Culross Flood Study carried out in 2019 identified two potential options which would provide flood protection to Culross. The option with the best cost benefit ratio has been submitted for prioritisation. This flood protection scheme is to continue to be developed through the prioritisation process. Current and long term flood risk should be considered and how the flood protection scheme and the area will adapt to changes in flood risk due to climate change.</p> <p>In accordance with the flood risk management plan, as part of the scheme or works, the responsible authority should aim to ensure the action will not have an adverse effect on the integrity of the Firth of</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Forth Special Protection Area and Ramsar Site, and the River Teith Special Area of Conservation. "
Funding	Fife Council Revenue
Coordination	SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.

Action ID	Culross	23402
Action Type	Flood study (options appraisal)	
Action Delivery Lead	Fife Council	Indicative Delivery FRM Cycle 2
Description	The Kincardine and Culross Flood Study carried out in 2019 identified two potential options which would provide flood protection to Culross. The option with the best cost benefit ratio has been submitted for prioritisation. Other option is to be further developed through a detailed option appraisal. Current and long term flood risk should be considered and the findings included in the adaptation plan.	
Funding	Fife Council Revenue	
Coordination	SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Culross 23403		
Action Type	Surface water management plan		
Action Delivery Lead	Fife Council	Indicative Delivery	To be completed early in FRM Cycle 2
Description	A surface water management plan is recommended for Culross. The results of the sewer flood risk assessment should be considered. Current and long term flood risk should be considered and if climate change impacts are found to be significant, surface water management should be included in the adaptation plan. Culross is a Scottish Water priority area and opportunities to work jointly should be explored.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council in coordination with Scottish Water and other actions in the area.		

Action ID	Culross 23404		
Action Type	Shoreline management plan (coastal adaptive plan)		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	A shoreline management plan has been produced for this area by Fife Council. The plan is now operational and no review is planned in the short term. In the longer term the plan will be reviewed with the latest data and adaptive approaches considered in relation to the impacts of climate change.		
Funding	Fife Council Revenue		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping.
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Action ID	Culross 23405		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies investigations and flood scheme works. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.		

Action ID	Culross 23406		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.

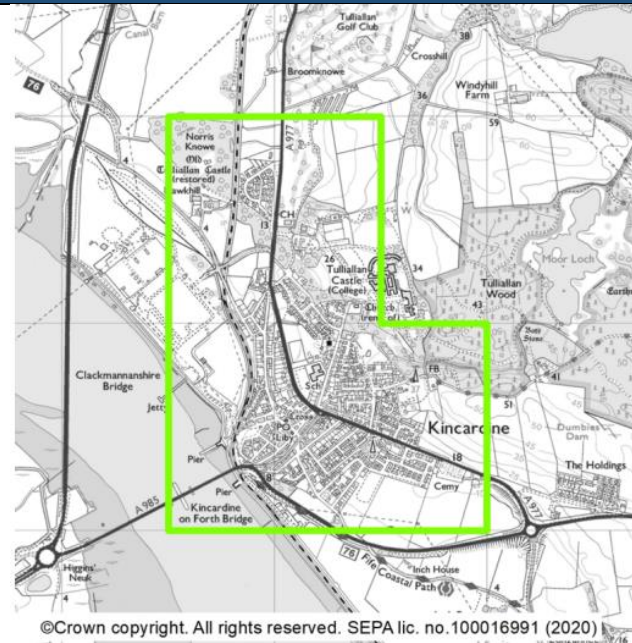
Local Flood Risk Management plan datasheet

Kincardine (target area 237)

Summary

The town of Kincardine is located on the northern shore of the Firth of Forth within the Fife Council area. The main source of flooding in Kincardine is coastal flooding, however there is also a risk from river flooding. There are approximately 540 people and 280 homes and businesses currently at risk from flooding. This is estimated to increase to 900 people and 480 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river and coastal flooding is improved by The Kincardine and Culross Flood Study completed in 2019, and the Fife Shoreline Management Plan. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. There are limited records of flooding in this target area with recent flooding occurring in August 2020. The Kincardine Flood Protection Scheme offers some protection against flooding in this area.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2371	Avoid inappropriate development that increases flood risk in Kincardine
Avoid flood risk	2372	Avoid an increase in flood risk by the appropriate management and maintenance of the Kincardine-on-Forth Flood Protection Scheme
Prepare for flooding	2373	Prepare for current flood risk and/or future flooding as a result of climate change in Kincardine
Reduce flood risk	2374	Reduce the risk of river and coastal flooding in Kincardine

Action ID	Kincardine 23701		
Action Type	Shoreline management plan (coastal adaptive plan)		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	A shoreline management plan has been produced for this area by Fife Council. The plan is now operational and no review is planned in the short term. In the longer term the plan will be reviewed with the latest data and adaptive approaches considered in relation to the impacts of climate change.		
Funding	Fife Council Revenue		
Coordination	SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping.		

Action ID	Kincardine	23702
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## Flood risk management plans: Forth Estuary Local Plan District (10)

Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

Action ID	Kincardine	23703	
Action Type	Flood defence maintenance		
Action Delivery Lead	Fife Council	Indicative Delivery	Ongoing
Description	Fife Council should continue to maintain the existing Kincardine on Forth Flood Prevention Scheme.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Kincardine 23704		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies investigations and flood scheme works. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.		

Action ID	Kincardine 23705		
Action Type	Flood scheme or works design		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	Fife Council have determined the best option for Kincardine. Subject to the availability of funding at later cycles, this option should be developed through outline and detailed design. Current and long-term flood risk should be considered and how the flood protection scheme and the area will adapt to changes in flood risk due to climate change.		
Funding	Fife Council Revenue		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.
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Action ID	Kincardine 23706		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Fife Council	Indicative Delivery	FRM Cycle 2
Description	The Kincardine and Culross Flood Study concluded in 2019 and identified options to manage flood risk in the area. It is recommended that findings of the flood study are reviewed at a future date in consultation with the local community.		
Funding	Fife Council Revenue		
Coordination	Action delivery lead is Fife Council and coordination will be determined once the actions have been finalised.		

## 02/10/10 (Falkirk and Grangemouth)

This area is designated as a potentially vulnerable area due to flood risk to a number of communities, including Denny, Dunipace, Carron, Carronshore, Falkirk and Grangemouth. The main source of flood risk is river, coastal and surface water flooding. The main watercourses are the River Carron and Grange Burn and their tributaries, including the Westquarter Burn and Bonny Water. There is a long history of flooding from a variety of sources in this area, with recent surface water flooding to the railway line near Larbert causing travel disruption in January 2020. Coastal flooding to Grangemouth has also been recorded.

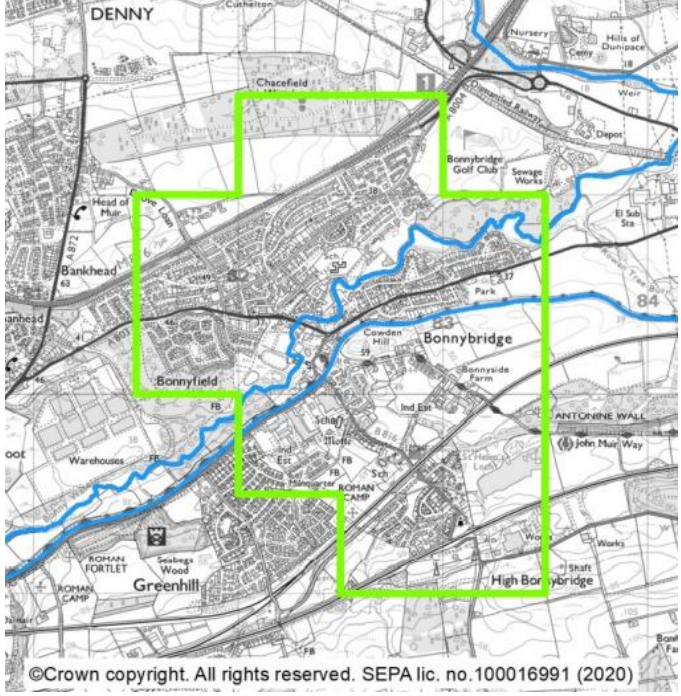
There are 8 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Bonnybridge	(target area 201)
Carron and Carronshore	(target area 211)
Denny and Dunipace	(target area 220)
Falkirk	(target area 228)
Grangemouth west	(target area 232)
Larbert and Stenhousemuir	(target area 243)
Cumbernauld east	(target area 286)
Polmont, Redding and Westquarter	(target area 308)

## Local Flood Risk Management plan datasheet

## Bonnybridge (target area 201)

Summary	Location Map
<p>The village of Bonnybridge is located 6km west of Falkirk, on the Bonny Water. It is within the Falkirk Council area. The main source of flooding in Bonnybridge is river flooding, however, there is also a risk of surface water flooding. There are approximately 430 people and 300 homes and businesses currently at risk of flooding. This is likely to rise to around 540 people and 350 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water has been improved by a sewer flood risk assessment. There is a long history of flooding in this area from the Bonny Water and frequent flooding from surface water.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2011	Avoid inappropriate development that increases flood risk in Bonnybridge
Improve data and understanding	2012	Improve data and understanding of surface water flooding to Bonnybridge and Banknock
Improve data and understanding	2013	Improve data and understanding of river flooding from the Bonny Water and its tributaries to Bonnybridge and Banknock
Prepare for flooding	2014	Prepare for current flood risk and future flooding as a result of climate change in Bonnybridge

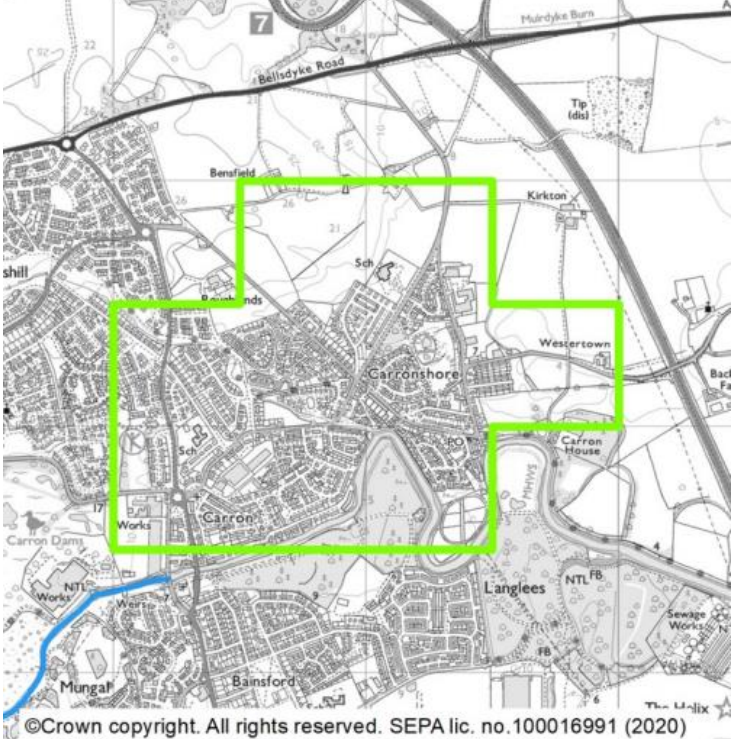
Action ID	Bonnybridge 20101		
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Bonnybridge has been noted as a hotspot and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots.		
Funding	Falkirk Council Revenue Budget		
Coordination	Falkirk Council will work in coordination with Scottish Water. This is a Scottish Water priority area. Joint working will be required to identify joint priorities.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Bonnybridge 20102		
Action Type	Community engagement		
Action Delivery Lead	Responsible Authorities	Indicative Delivery	Ongoing
Description	Community engagement opportunities will be sought where possible with the community organisations of Bonnybridge regarding improving community resilience.		
Funding	To be identified depending on actions		
Coordination	Responsible authorities will work in coordination with the Scottish Flood Forum.		

## Local Flood Risk Management plan datasheet

Carron and Carronshore (target area 211)

Summary	Location Map
<p>Carron and Carronshore are villages in Falkirk, located on the north bank of the River Carron. The River Carron is tidally influenced at this location as it is near its outflow into the Firth of Forth. The main source of flooding is river flooding. However there is also a risk of surface water and coastal flooding. There are approximately 1,400 people and 670 homes and businesses currently at risk from flooding. This is likely to increase to 1,900 people and 920 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river and coastal flooding has been improved by a flood study in support of the Grangemouth Flood Protection Scheme. The national level assessment for surface water flooding has been improved by an integrated catchment study. There is a long record of flooding in this area.



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Carron and Carronshore 21101		
Action Type	Flood scheme or works design		
Action Delivery Lead	Falkirk Council	Indicative Delivery	2026-28
Description	Following notification in 2022 and subsequent confirmation, the Grangemouth Flood Protection Scheme will progress to the detailed design stage. A climate change adaptation plan will be developed to allow for the likely impacts of climate change to be better considered.		
Funding	Funding is expected from Scottish Government Capital Grant allocation.		
Coordination	Falkirk Council will work with other responsible authorities and landowners as required.  SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.		

Action ID	Carron and Carronshore 21102		
Action Type	Flood scheme or works implementation		
Action Delivery Lead	Falkirk Council	Indicative Delivery	The construction phase of the flood protection scheme is estimated to take around 10 years to complete.
Description	This action is proposed as the best viable option for managing flood risk in this community. The delivery of this action is subject to funding being made available.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Once detailed design is complete the Grangemouth Flood Protection Scheme will progress to the procurement and construction phase. The construction phase of the flood protection scheme is estimated to take around 10 years to complete.
Funding	Funding is expected from Scottish Government Capital Grant allocation.
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD, work on coastal flood mapping and flood warning actions.

Action ID	Carron and Carronshore 21103		
Action Type	Community engagement		
Action Delivery Lead	Responsible Authorities	Indicative Delivery	Ongoing
Description	Community engagement opportunities will be sought where possible with the community organisations of Carron and Carronshore regarding improving community resilience. Community engagement will continue throughout the progression of the Grangemouth Flood Protection Scheme.		
Funding	To be identified depending on actions.		
Coordination	Action delivery leads are the responsible authorities in coordination with the Scottish Flood Forum.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Carron and Carronshore 21104		
Action Type	Flood study		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	Flood risk associated with the Chapel Burn is not well understood. A modelling study is required to quantify this risk. However, this risk is not considered significant and, therefore, the modelling study is a low priority. Some modelling of the lower reaches of the Chapel Burn has been incorporated within the Grangemouth Flood Protection Scheme model.		
Funding	Falkirk Council Revenue Budget		
Coordination	Action delivery lead is Falkirk Council and coordination will be determined once the actions have been finalised.		

Action ID	Carron and Carronshore 21105		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Dalderse sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	action is secured through Scottish Water's strategic planning commitments.
Funding	Funding for this action is secured within Scottish Water's business plan.
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.

Action ID	Carron and Carronshore 21106		
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Carronside has been noted as a hotspot and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots		
Funding	Falkirk Council Revenue Budget		
Coordination	Action delivery lead is Falkirk Council in coordination with Scottish Water and SEPA. This is a Scottish Water priority area. Joint working will be required to identify joint priorities. Consideration to be given for the Grangemouth Flood Protection Schem		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Carron and Carronshore 21107		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Ongoing
Description	The Carron flood warning scheme is currently under development. SEPA will maintain the Carron flood warning scheme once complete.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with Falkirk Council on the potential to use information from the flood study and flood scheme development to inform the flood warning scheme. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.		

Action ID	Carron and Carronshore 21108		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		

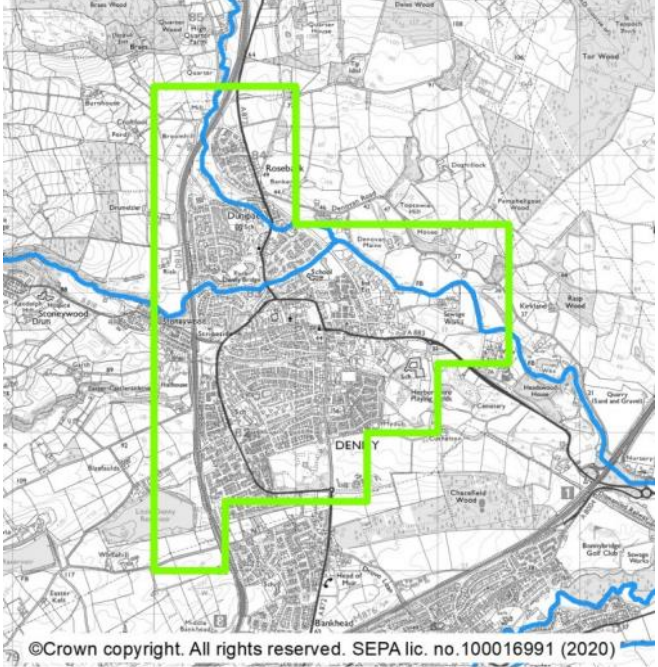
## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies and flood scheme development. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.
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Action ID	Carron and Carronshore 21109		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

## Local Flood Risk Management plan datasheet

Denny &amp; Dunipace (target area 220)

Summary	Location Map
<p>Denny and Dunipace are located west of Falkirk and within the Falkirk Council area. The main source of flooding in Denny and Dunipace is river flooding from the River Carron, Avon Burn and Castlerankine Burn. There is also a risk from surface water flooding. There are approximately 880 people and 450 homes and businesses currently at risk from flooding. This is estimated to increase to 1,200 people and 600 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding has been improved by a baseline flood mapping study for Denny and Dunipace completed in 2019. There is a long record of flooding in this area from the River Carron, Castlerankine Burn and Avon Burn including recent floods in 2020. Frequent surface water floods have also been recorded.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2201	Avoid inappropriate development that increases flood risk in Denny and Dunipace
Improve data and understanding	2202	Improve data and understanding of surface water flooding in Denny and Dunipace
Prepare for flooding	2203	Prepare for current flood risk and/or future flooding as a result of climate change in Denny and Dunipace
Reduce flood risk	2204	Reduce the risk of river flooding from the River Carron, Avon Burn and Castlerankine Burn to Denny and Dunipace

Action ID	Denny and Dunipace 22001		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	A flood protection study is to be progressed for this area to assess options to manage flood risk. Options should include a combination of structural and non-structural elements including natural flood management. The assessment should consider these actions in combination and the impacts on flood risk upstream and downstream of each action.		
Funding	Falkirk Council Revenue Budget		
Coordination	Falkirk Council will appoint a Consultant to assist with the delivery of this project. Falkirk Council will liaise with SEPA, responsible authorities, landowners and other agencies where required.		



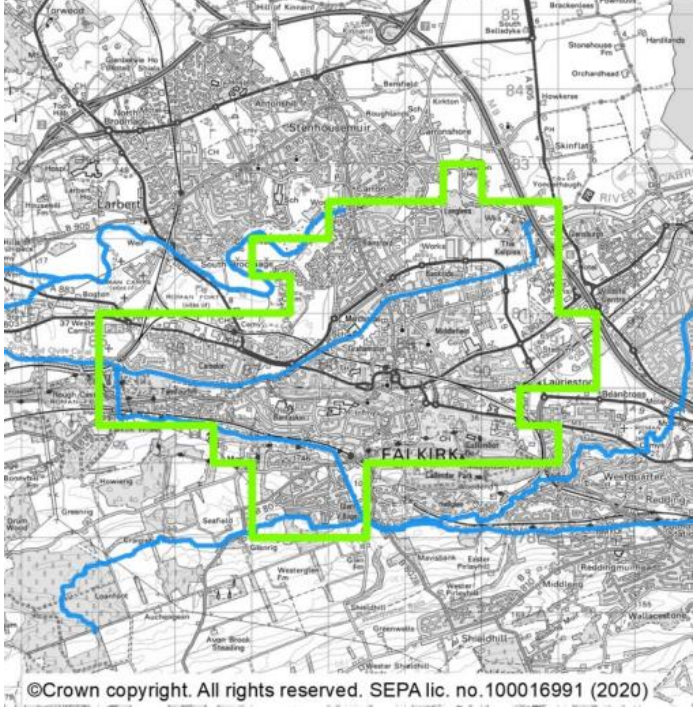
## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Denny and Dunipace		22002
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Denny and Dunipace has been noted as two hotspots and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots.		
Funding	Falkirk Council Revenue Budget		
Coordination	Action delivery lead is Falkirk Council in coordination with Scottish Water and SEPA.		

Action ID	Denny and Dunipace		22003
Action Type	Community engagement		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Ongoing
Description	Community engagement opportunities will be sought where possible with the community organisations of Denny and Dunipace regarding improving community resilience.		
Funding	To be identified depending on actions.		
Coordination	Action delivery lead is the Falkirk Council in coordination with the responsible authorities and the Scottish Flood Forum.		

## Local Flood Risk Management plan datasheet

Falkirk (target area 228)

Summary	Location Map
<p>The town of Falkirk is located in the Forth Valley west of Edinburgh and within the Falkirk Council area. The main source of flooding in Falkirk is surface water, however, there is also a risk from river flooding. There are approximately 2,300 people and 1,300 properties currently at risk from flooding. This is estimated to increase to 3,400 people and 1,800 properties by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river and coastal flooding has been improved in this area by a flood study in support of the Grangemouth Flood Protection Scheme. The national level assessment for surface water flooding has also been improved by an integrated catchment study and a sewer flood risk assessment. There is a long record of flooding in this area from rivers and surface water. In February 2020 the River Carron burst its banks near Stirling Road and there were also incidents of surface water flooding.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2281	Avoid inappropriate development that increases flood risk in Falkirk
Prepare for flooding	2282	Prepare for current flood risk and future flooding as a result of climate change in Falkirk
Reduce flood risk	2283	Reduce the risk of surface water flooding in Falkirk
Reduce flood risk	2284	Reduce the risk of river flooding from the River Carron in Falkirk

Action ID	Falkirk 22801		
Action Type	Flood scheme or works design		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Cycle 2
Description	Following notification in 2022 and subsequent confirmation, the Grangemouth Flood Protection Scheme will progress to the detailed design stage. A climate change adaptation plan will be developed to allow for the likely impacts of climate change to be better considered.		
Funding	Funding is expected from Scottish Government Capital Grant allocation		
Coordination	<p>Falkirk Council will work with other responsible authorities and landowners as required.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Falkirk 22802		
Action Type	Flood scheme or works implementation		
Action Delivery Lead	Falkirk Council	Indicative Delivery	The construction phase of the flood protection scheme is estimated to take around 10 years to complete
Description	This action is proposed as the best viable option for managing flood risk in this community. The delivery of this action is subject to funding being made available. Once detailed design is complete the Grangemouth Flood Protection Scheme will progress to the procurement and construction phase. The construction phase of the flood protection scheme is estimated to take around 10 years to complete.		
Funding	Funding is expected from Scottish Government Capital Grant allocation.		
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD, work on coastal flood mapping and flood warning actions.		

Action ID	Falkirk 22803		
Action Type	Community engagement		
Action Delivery Lead	Responsible authorities	Indicative Delivery	Ongoing
Description	Community engagement opportunities will be sought where possible with the community organisations of Falkirk regarding improving community resilience. Community engagement will continue		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	throughout the progression of the Grangemouth Flood Protection Scheme.
Funding	To be identified depending on actions.
Coordination	Action delivery leads are the responsible authorities in coordination with the Scottish Flood Forum.

Action ID	Falkirk	22804
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Kinneil Kerse sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan.	
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.	

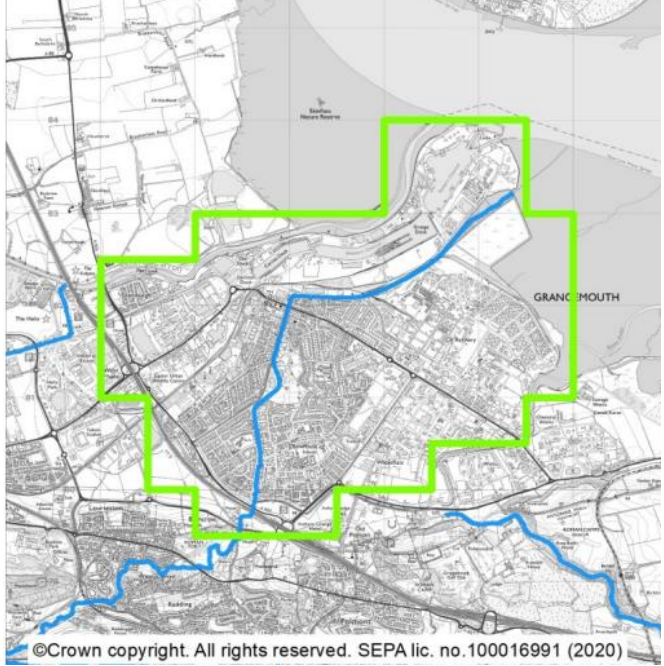
## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Falkirk 22805		
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Two hotspots have been noted and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots		
Funding	Falkirk Council Revenue Budget.		
Coordination	Falkirk Council will work in coordination with Scottish Water. Consideration to be given for the Grangemouth Flood Protection Scheme.		

Action ID	Falkirk 22806		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Ongoing
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA's flood warning service activities will be coordinated with the activities of other responsible authorities as required		

## Local Flood Risk Management plan datasheet

Grangemouth West (target area 232)

Summary	Location Map
<p>Grangemouth West is located on the south shore of the Firth of Forth and incorporates residential areas as well as the Grangemouth petrochemical complex and dock, which are nationally important infrastructure. It is within the Falkirk Council area. The main source of flooding is coastal flooding and there is also risk from river and surface water flooding. There are approximately 10,000 people and 6,000 homes and businesses at risk from flooding, which is a significant proportion of the community. This is estimated to rise to 17,000 people and 9,300 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding has been improved by a flood study in support of the Grangemouth Flood Protection Scheme. The national level assessment for surface



## Flood risk management plans: Forth Estuary Local Plan District (10)

water has been improved by an integrated catchment study and a sewer flood risk assessment. There is a long record of flooding in this area from river and surface water including recent flooding in August 2020.

Objective	ID	Description
Avoid flood risk	2321	Avoid inappropriate development that increases flood risk in Grangemouth West
Avoid flood risk	2322	Avoid an increase in flood risk by the appropriate management and maintenance of Grangeburn Road Flood Protection Scheme
Prepare for flooding	2323	Prepare for current flood risk and future flooding as a result of climate change in Grangemouth west
Reduce flood risk	2324	Reduce the risk of coastal flooding and river flooding from the River Carron, Avon and Grange Burn in Grangemouth
Reduce flood risk	2325	Reduce the risk of surface water flooding in Grangemouth

Action ID	Grangemouth west 23201		
Action Type	Flood scheme or works design		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Second half of cycle 2
Description	Following notification in 2022 and subsequent confirmation, the Grangemouth Flood Protection Scheme will progress to the detailed design stage. A climate change adaptation plan will be developed to allow for the likely impacts of climate change to be better considered.		



## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	Funding is expected from Scottish Government Capital Grant allocation.
Coordination	SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.

Action ID	Grangemouth west 23202		
Action Type	Flood scheme or works implementation		
Action Delivery Lead	Falkirk Council	Indicative Delivery	The construction phase of the flood protection scheme is estimated to take around 10 years to complete
Description	<p>This action is proposed as the best viable option for managing flood risk in this community. The delivery of this action is subject to funding being made available.</p> <p>Once detailed design is complete the Grangemouth Flood Protection Scheme will progress to the procurement and construction phase. The construction phase of the flood protection scheme is estimated to take around 10 years to complete.</p>		
Funding	Funding is expected from Scottish Government Capital Grant allocation.		
Coordination	Falkirk Council will work with other responsible authorities and landowners as required.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD, work on coastal flood mapping and flood warning actions.
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Action ID	Grangemouth west 23203		
Action Type	Community engagement		
Action Delivery Lead	Responsible Authorities	Indicative Delivery	Ongoing
Description	Community engagement opportunities will be sought where possible with the community organisations of Grangemouth west regarding improving community resilience. Community engagement will continue throughout the progression of the Grangemouth Flood Protection Scheme.		
Funding	To be identified depending on actions.		
Coordination	Action delivery leads are the responsible authorities in coordination with the Scottish Flood Forum.		

Action ID	Grangemouth west 23204		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Dalderse and Kinneil Kerse sewer catchments in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.
Funding	Funding for this action is secured within Scottish Water's business plan.
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.

Action ID	Grangemouth west 23205		
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Glensburgh and Zetland have been noted as two hotspots and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots. GFPS will undertake the majority of the modelling for this area.		
Funding	Falkirk Council Revenue Budget		
Coordination	Action delivery lead is Falkirk Council in coordination with Scottish Water and SEPA. Consideration to be given for the Grangemouth Flood Protection Scheme		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Grangemouth west 23206		
Action Type	Flood defence maintenance		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Ongoing
Description	Maintenance to the existing Grangeburn Road flood protection defences should continue. This existing scheme will be upgraded by the Grangemouth Flood Protection Scheme.		
Funding	Falkirk Council Revenue Budget		
Coordination	Action delivery lead is Falkirk Council and coordination will be determined once the actions have been finalised.		

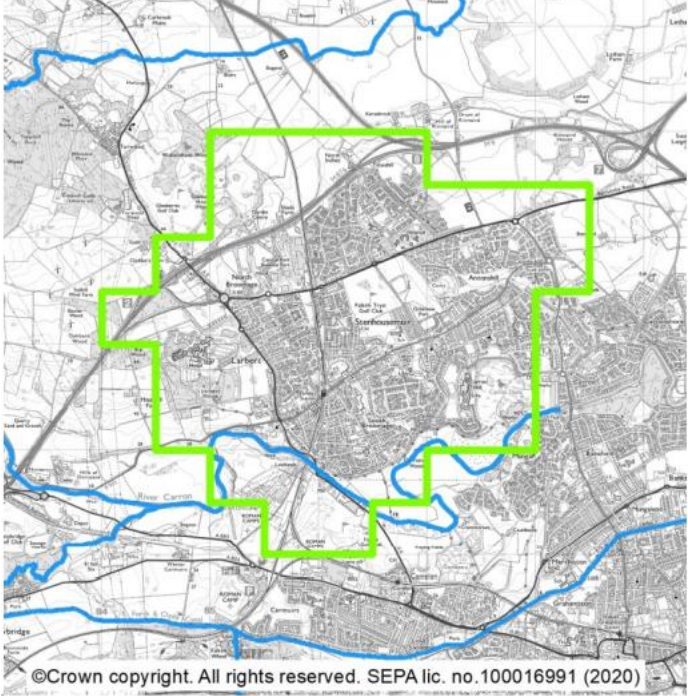
Action ID	Grangemouth west 23207		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies and flood scheme development. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Grangemouth west 23208		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

## Local Flood Risk Management plan datasheet

Larbert and Stenhousemuir (target area 243)

Summary	Location Map
<p>Larbert and Stenhousemuir are located north-west of Falkirk within the Falkirk Council area. The main source of flooding is surface water, however, there is also a risk from river flooding. There are approximately 740 people and 410 homes and businesses currently at risk from flooding. This is likely to increase to 1,100 people and 590 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for coastal and river flooding has been improved by a flood study in support of the Grangemouth Flood Protection Scheme. The national level assessment for surface water flooding has been improved by an integrated catchment study and a sewer flood risk assessment. There are frequent records of flooding in this area from surface water and rivers including the Chapel Burn and River Carron.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2431	Avoid inappropriate development that increases flood risk in Larbert and Stenhousemuir
Improve data and understanding	2432	Improve data and understanding of river flooding from the Chapel Burn
Prepare for flooding	2433	Prepare for current flood risk and/or future flooding as a result of climate change in Larbert and Stenhousemuir
Reduce flood risk	2434	Reduce the risk of surface water flooding in Larbert and Stenhousemuir

Action ID	Larbert and Stenhousemuir 24301		
Action Type	Flood scheme or works design		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Cycle 2
Description	The selected preferred approach for managing flood risk is to be designed following the completion of the flood study, including consideration of the long-term impacts of climate change. These can include small scale works or works to improve catchment management. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.		
Funding	Funding is expected from Scottish Government Capital Grant allocation.		
Coordination	SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Larbert and Stenhousemuir		24302
Action Type	Flood scheme or works implementation		
Action Delivery Lead	Falkirk Council	Indicative Delivery	The construction phase of the flood protection scheme is estimated to take around 10 years to complete
Description	<p>This action is proposed as the best viable option for managing flood risk in this community. The delivery of this action is subject to funding being made available. Once confirmed and detailed design is underway the Grangemouth Flood Protection Scheme will progress to a rolling programme of procurement and construction. The construction of the flood protection scheme is estimated to take up to 10 years to complete.</p>		
Funding	Funding is expected from Scottish Government Capital Grant allocation		
Coordination	<p>Action delivery lead is Falkirk Council and coordination will be determined once the actions have been finalised.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD and work on coastal flood mapping.</p>		

Action ID	Larbert and Stenhousemuir		24303
Action Type	Community engagement		
Action Delivery Lead	Responsible Authorities	Indicative Delivery	Ongoing



## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	Community engagement opportunities will be sought where possible with the community organisations of Larbert and Stenhousemuir regarding improving community resilience. Community engagement will continue throughout the progression of the Grangemouth Flood Protection Scheme.
Funding	To be identified depending on actions.
Coordination	Action delivery leads are the responsible authorities in coordination with the Scottish Flood Forum.

Action ID	Larbert and Stenhousemuir	24304
Action Type	Flood study	
Action Delivery Lead	Falkirk Council	Indicative Delivery Before 2028
Description	Flood risk associated with the Chapel Burn is not well understood. A modelling study is required to quantify this risk. However, this risk is not considered significant and, therefore, the modelling study is a low priority. Some modelling of the lower reaches of the Chapel Burn has been incorporated within the Grangemouth Flood Protection Scheme Model.	
Funding	Falkirk Council Revenue Budget	
Coordination	Action delivery lead is Falkirk Council and coordination will be determined once the actions have been finalised.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Larbert and Stenhousemuir	24305
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Dalderse sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan.	
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.	

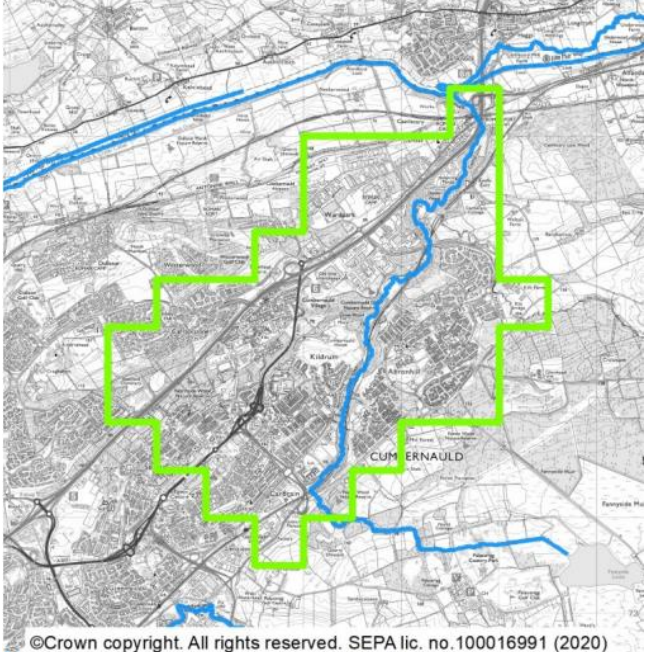
Action ID	Larbert and Stenhousemuir	24306
Action Type	Surface water management plan	
Action Delivery Lead	Falkirk Council	Indicative Delivery Before 2028
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Larbert has been noted as two hotspots and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots. GFPS will undertake the majority of the modelling for this area.</p>
Funding	Falkirk Council Revenue budget
Coordination	Action delivery lead is Falkirk Council in coordination with Scottish Water. Consideration to be given for the Grangemouth Flood Protection Scheme.

## Local Flood Risk Management plan datasheet

Cumbernauld east (target area 286)

Summary	Location Map
<p>The eastern part of the town of Cumbernauld is located in the central belt of Scotland and it is mostly within the North Lanarkshire local authority area (a small area lies within the Falkirk local authority area). The main source of flooding in Cumbernauld east is surface water flooding, however there is also risk from river flooding. There are approximately 1,500 people and 780 homes and businesses currently at risk from flooding. This is estimated to increase to 1,800 people and 900 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved by the Dunswood integrated catchment study which

## Flood risk management plans: Forth Estuary Local Plan District (10)

assesses the interactions between the different flood sources. There is a long record of flooding in this target area.

Objective	ID	Description
Avoid flood risk	2861	Avoid inappropriate development that increases flood risk in this objective target area
Prepare for flooding	2862	Prepare for current flood risk and future flooding as a result of climate change in this objective target area
Reduce flood risk	2863	Reduce the risk of flooding in this objective target area

Action ID	Cumbernauld east 28601		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	Cycle 2
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Dunnswood sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		

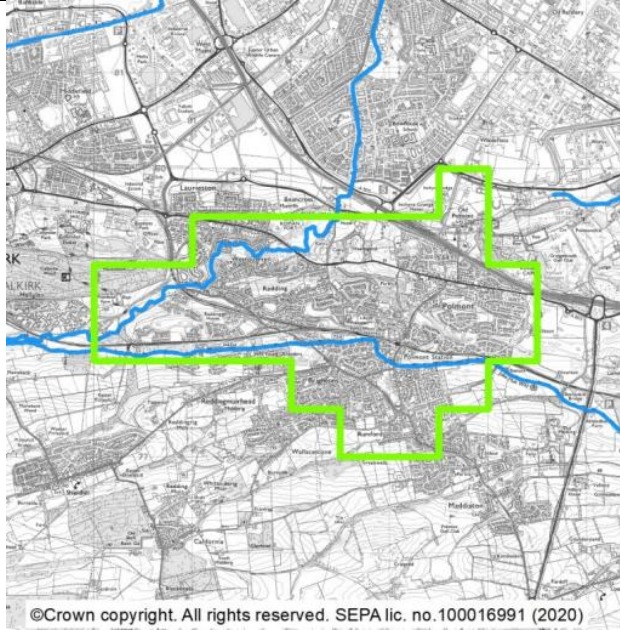
## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority and SEPA.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA</p>
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Action ID	Cumbernauld east 28602		
Action Type	Surface water management plan		
Action Delivery Lead	North Lanarkshire Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>Further details of this action will be informed by developments in flood risk management planning between 2022-2028.</p>		
Funding	North Lanarkshire Council		
Coordination	Action delivery lead is North Lanarkshire Council in coordination with Scottish Water.		

## Local Flood Risk Management plan datasheet

Polmont, Redding and Westquarter (target area 308)

Summary	Location Map
<p>Polmont, Redding and Westquarter are villages located to the south-east of Falkirk, within the Falkirk Council area. The main source of flooding is surface water flooding, but there is also a risk from river flooding. There are approximately 870 people and 440 homes and businesses currently at risk from flooding. This is likely to increase to 1,000 people and 520 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding has been partly improved by a flood study in support of the Grangemouth Flood Protection Scheme. The national level assessment for surface water flooding has been improved by an integrated catchment study and a sewer flood risk assessment. There are frequent records of flooding in this area from rivers and surface water. Flooding of multiple homes occurred recently during the August 2020 storms.



## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3081	Avoid inappropriate development that increases flood risk in Polmont, Redding and Westquarter
Prepare for flooding	3082	Prepare for current flood risk and future flooding as a result of climate change in Polmont, Redding and Westquarter
Reduce flood risk	3083	Reduce the risk of river flooding from the Westquarter Burn in Westquarter
Reduce flood risk	3084	Reduce the risk of surface water flooding in Polmont, Redding and Westquarter

Action ID	Polmont, Redding and Westquarter 30801		
Action Type	Flood study		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Completed in 2022
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The flood study for the Westquarter Burn at Westquarter Village has been developed in 2022. The study involves flood modelling, an assessment of actions to manage flood risk and scoping of further work where appropriate. As the study area falls within the upstream catchment of the developing Grangemouth Flood Protection Scheme, close integration between the two studies will be required. Preliminary design works for a potential scheme will progress in Cycle 2, with the review of costs required prior to any funding application for a scheme.</p>		
Funding	Falkirk Council Revenue budget		



## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	Falkirk Council appointed a Consultant to assist with the delivery of this project. Falkirk Council will coordinate with SEPA, responsible authorities, landowners and other agencies where required.
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Action ID	Polmont, Redding and Westquarter 30802		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Kinneil Kerse sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Polmont, Redding and Westquarter 30803		
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Polmonthill has been noted as a hotspot and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots. GFPS will undertake the majority of the modelling for this area.</p>		
Funding	Falkirk Council Revenue Budget		
Coordination	Falkirk Council will work in coordination with Scottish Water		

Action ID	Polmont, Redding and Westquarter 30804		
Action Type	Community engagement		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Community engagement opportunities will be sought where possible with the community organisations of Polmont, Redding and Westquarter regarding improving community resilience.
Funding	To be identified depending on actions
Coordination	Action delivery leads are the responsible authorities in coordination with the Scottish Flood Forum.

## 02/10/11 (Bo'ness)

This area is designated as a potentially vulnerable area due to flood risk to Bo'ness and Grangemouth (east). The main sources of flooding are surface water and coastal with flood risk in Grangemouth (east) also coming from the River Avon. Coastal flood protection measures protect Bo'ness from coastal flooding. There is a long history of flooding in this area from surface water.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Bo'ness	(target area 200)
Grangemouth east	(target area 262)

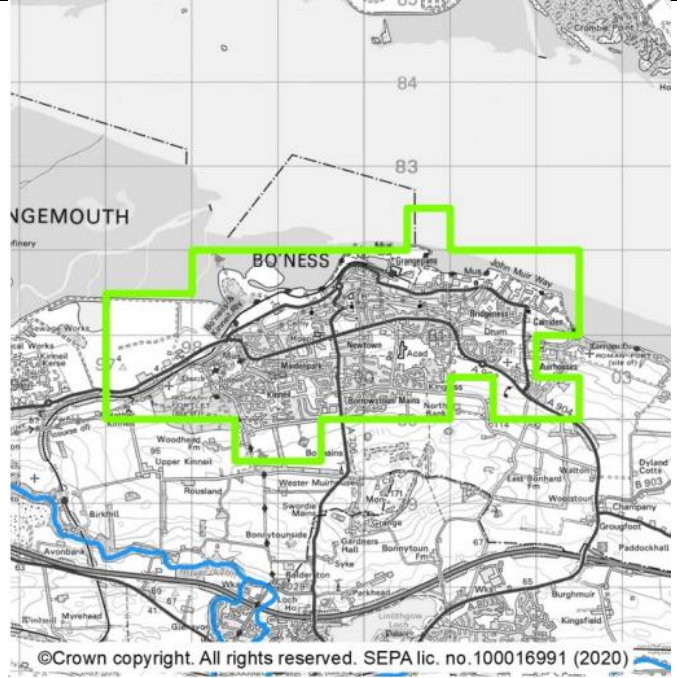
Local Flood Risk Management plan datasheet

Bo'ness (target area 200)

Summary

Bo'ness is located on the south bank of the Firth of Forth within the Falkirk Council area. The main source of flood risk in Bo'ness is from surface water and small watercourses. Coastal flood risk is being managed with coastal flood defences. There are approximately 2,400 people and 1,200 homes and businesses currently at risk from flooding. This is likely to increase to approximately 2,900 people and 1,500 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water has been improved by the integrated catchment study covering Bo'ness, Dalderse and Kinneil Kerse and a sewer flood risk assessment. There is a long history of flooding in this area from surface water. Coastal flooding is managed by the operation of the coastal flood protection scheme.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2001	Avoid inappropriate development that increases flood risk in Bo'ness
Avoid flood risk	2002	Avoid an increase in flood risk by the appropriate management and maintenance of existing coastal flood defences
Prepare for flooding	2003	Prepare for current flood risk and future flooding as a result of climate change in Bo'ness
Reduce flood risk	2004	Reduce the risk of surface water flooding in Bo'ness

Action ID	Bo'ness 20001		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Bo'ness sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	Action delivery lead is Scottish Water in coordination with the local authority.
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Action ID	Bo'ness	20002	
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>The Bo'ness surface water management has been developed and has incorporated the outputs from the Bo'ness Integrated Catchment Study and Scottish Water's assessment of sewer flood risk. Falkirk Council will now look into each hotspot with a review of preliminary design and funding for each if viable.</p>		
Funding	Falkirk Council Revenue Budget		
Coordination	Action delivery lead is Falkirk Council in coordination with Scottish Water.		

Action ID	Bo'ness	20003	
Action Type	Community engagement		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Ongoing

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.  Community engagement opportunities will be sought where possible with the community organisations of Bo'ness regarding improving community resilience.
Funding	To be identified depending on actions
Coordination	Action delivery leads are the responsible authorities in coordination with the Scottish Flood Forum.

Action ID	Bo'ness	20004
Action Type	Flood defence maintenance	
Action Delivery Lead	Falkirk Council	Indicative Delivery Ongoing
Description	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.  Monitoring and maintenance of the Bo'ness Flood Protection Scheme will continue.	
Funding	Falkirk Council Revenue budget	
Coordination	Action delivery lead is Falkirk Council and coordination will be determined once the actions have been finalised.	

Action ID	Bo'ness	20005
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery Second half of cycle



## Flood risk management plans: Forth Estuary Local Plan District (10)

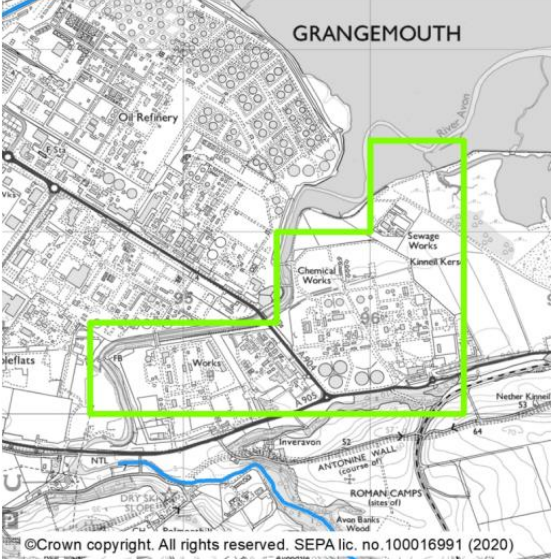
Description	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.

Action ID	Bo'ness	20006
Action Type	Adaptation plan	
Action Delivery Lead	Falkirk Council	Indicative Delivery Before 2028
Description	<p>Information on climate change is to be used to develop an adaptation plan to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A climate change adaptation plan will be developed for the Bo'ness Flood Protection Scheme to allow for the likely impacts of climate change to be better understood. Future changes are to be monitored and where possible managed. Initially this should include an investigation into how the new climate change projections affect coastal flood risk in the area.</p>	
Funding	Falkirk Council Revenue Budget	

Coordination	Falkirk Council will appoint a Consultant to assist with the delivery of this project. Falkirk Council will liaise with SEPA, responsible authorities, landowners and other agencies where required.
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## Local Flood Risk Management plan datasheet

Grangemouth east (target area 262)

Summary	Location Map
<p>Grangemouth East is located on the south shore of the Firth of Forth. It incorporates the Kinneil Complex of the Grangemouth refinery site. It is in the Falkirk Council area. The main source of flooding to Grangemouth East is coastal flooding, however, there is also a risk from river and surface water flooding. There are approximately 230 homes and businesses at risk from flooding.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river and coastal flooding has been improved by a flood study in support of the Grangemouth Flood Protection Scheme. There are records of flooding in this area including coastal, surface water and river flooding.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2621	Avoid inappropriate development that increases flood risk in Grangemouth (east)
Prepare for flooding	2622	Prepare for current flood risk and future flooding as a result of climate change in Grangemouth (east)
Reduce flood risk	2623	Reduce the risk of coastal flooding and river flooding from the River Avon in Grangemouth

Action ID	Grangemouth east			26201
Action Type	Flood scheme or works design			
Action Delivery Lead	Falkirk Council	Indicative Delivery	Second half of cycle	
Description	<p>The selected preferred approach for managing flood risk is to be designed following the completion of the flood study, including consideration of the long-term impacts of climate change. These can include small scale works or works to improve catchment management. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>Following notification in 2022 and subsequent confirmation, the Grangemouth Flood Protection Scheme will progress to the detailed design stage. A climate change adaptation plan will be developed to allow for the likely impacts of climate change to be better considered.</p>			
Funding	Funding is expected from Scottish Government Capital Grant allocation			
Coordination	Falkirk Council will work with other responsible authorities and landowners as required			

## Flood risk management plans: Forth Estuary Local Plan District (10)

	SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.
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Action ID	Grangemouth east 26202		
Action Type	Flood scheme or works implementation		
Action Delivery Lead	Falkirk Council	Indicative Delivery	The construction phase of the flood protection scheme is estimated to take around 10 years to complete
Description	<p>The flood scheme/works is to be built following agreement of the design, costs and timescales.</p> <p>This action is proposed as the best viable option for managing flood risk in this community. The delivery of this action is subject to funding being made available. Once detailed design is complete the Grangemouth Flood Protection Scheme will progress to the procurement and construction phase. The construction phase of the flood protection scheme is estimated to take around 10 years to complete.</p>		
Funding	Funding is expected from Scottish Government Capital Grant allocation		
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD, work on coastal flood mapping and flood warning actions.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Grangemouth east 26203		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Kinneil Kerse sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

Action ID	Grangemouth east 26204		
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.
Funding	Falkirk Council Revenue budget
Coordination	Action delivery lead is Falkirk Council in coordination with Scottish Water and SEPA. Consideration to be given for the Grangemouth Flood Protection Scheme.

Action ID	Grangemouth east 26205		
Action Type	Community engagement		
Action Delivery Lead	Responsible authorities	Indicative Delivery	Ongoing
Description	<p>Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.</p> <p>Community engagement opportunities will be sought where possible with the community organisations of Grangemouth east regarding improving community resilience. Community engagement will continue throughout the progression of the Grangemouth Flood Protection Scheme.</p>		
Funding	To be identified depending on actions		
Coordination	Action delivery leads are the responsible authorities in coordination with the Scottish Flood Forum.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Grangemouth east 26206		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	<p>The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.</p>		
Coordination	<p>SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies investigations and flood scheme development. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.</p>		

Action ID	Grangemouth east 26207		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	<p>SEPA will continue to update flood maps based on new information.</p> <p>SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the</p>		



## Flood risk management plans: Forth Estuary Local Plan District (10)

	impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.

## 02/10/12 (Linlithgow)

This area is designated as a potentially vulnerable area due to flood risk to Linlithgow. The main source of flooding is surface water, the River Avon and minor watercourses. A number of floods have been recorded in this area from surface water causing flooding of properties and damage to roads.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

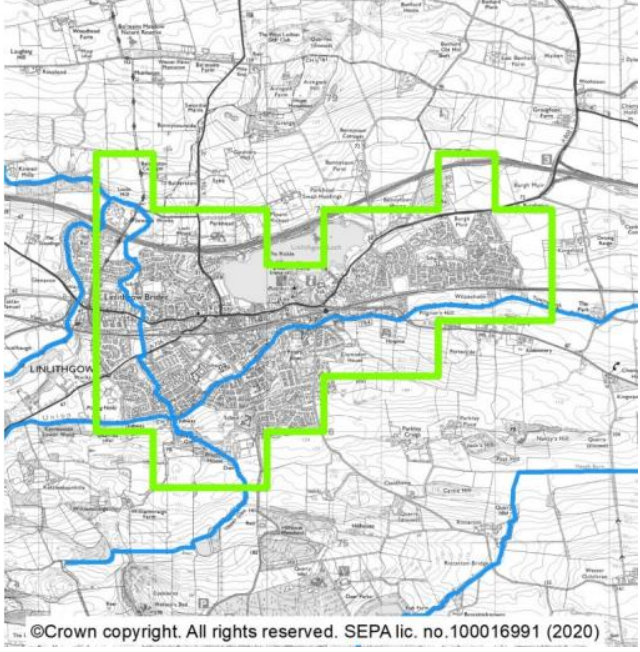
### List of target areas

Linlithgow

(target area 246)

## Local Flood Risk Management plan datasheet

Linlithgow (target area 246)

Summary	Location Map
<p>Linlithgow is a town located in the West Lothian Council area. The main source of flooding in Linlithgow is surface water, however there is also a risk of river flooding from the River Avon and Bell's Burn. The local authority and Scottish Water have carried out flood studies in this area which identified approximately 250 homes and businesses at risk of flooding.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding is improved by flood studies and ongoing flow monitoring in local watercourses. Understanding of surface water flooding is improved by a surface water management plan, an integrated catchment study and a sewer flood risk assessment carried out by the local authority and Scottish Water. There is a long record of flooding in this area with many floods recorded, notably in July 1998 when prolonged thunderstorms caused flooding to 100 homes leading to the development of the Mains Burn Flood Protection Scheme (2004). In May 2005 a localised storm resulted in extensive surface water flooding on the east side of the town with 12 homes affected.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2461	Avoid inappropriate development that increases flood risk in Linlithgow
Avoid flood risk	2462	Avoid an increase in flood risk by the appropriate management and maintenance of the Linlithgow Flood Protection Scheme along the Mains Burn
Improve data and understanding	2463	Improve data and understanding of the performance of Linlithgow flood protection scheme along the Mains Burn
Prepare for flooding	2464	Prepare for current flood risk and future flooding as a result of climate change in Linlithgow
Reduce flood risk	2465	Reduce the risk of surface water flooding in Linlithgow
Reduce flood risk	2466	Reduce the risk of river flooding from the River Avon and Bell's Burn in Linlithgow

Action ID	Linlithgow 24601		
Action Type	Flood scheme or works design		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	The selected preferred approach for managing flood risk is to be designed following the completion of the flood study, including consideration of the long-term impacts of climate change. These can include small scale works or works to improve catchment management. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	A flood study for Bell's Burn was completed in 2021 and recommended works or a scheme to protect houses and businesses from flooding. The proposed works include a bund and property level protection.
Funding	West Lothian Council
Coordination	Action delivery lead is West Lothian Council.

Action ID	Linlithgow	24602
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery Cycle 2
Description	<p>The flood scheme/works is to be built following agreement of the design, costs and timescales.</p> <p>The responsible authority proposes this action as the best viable option for managing flood risk in this community. The delivery of this action is subject to funding being made available. The proposed works include a bund and property level protection.</p>	
Funding	West Lothian Council	
Coordination	Action delivery lead is West Lothian Council in coordination with SEPA.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Linlithgow 24603		
Action Type	Data collection		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>Equipment that measures rainfall, river levels, erosion, ground levels or wave height may be installed and maintained to improve our understanding of flood risk. This can be done over short term or to measure longer term impacts.</p> <p>West Lothian Council should continue current efforts in data collection and monitoring to improve the confidence in flood sources, mechanisms and risk relating to river flooding from the River Avon. The new data should be used to update the existing flood risk assessment as deemed necessary.</p>		
Funding	West Lothian Council		
Coordination	SEPA will work with the local authority on the potential to coordinate opportunities for joint data collection activities.		

Action ID	Linlithgow 24604		
Action Type	Flood study (existing flood defences)		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>The performance and condition of the existing flood defences are to be evaluated, including consideration of the likely impacts of climate change. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A study is recommended to investigate the performance and long-term management of the existing flood protection scheme along the Mains Burn. The study may require survey of flood defences, data collection and flood modelling. The study should include a comprehensive assessment of the potential impacts of climate change and aim to develop a long-term plan to managing the flood defences.</p>
Funding	West Lothian Council
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD.

Action ID	Linlithgow	24605
Action Type	Flood defence maintenance	
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery Cycle 2
Description	<p>The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.</p> <p>Maintenance to the existing 2001 Mains Burn (Linlithgow) Flood Protection Scheme should continue.</p>	
Funding	Not yet confirmed	
Coordination	Action delivery lead is West Lothian Council and coordination will be determined once the actions have been finalised.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Linlithgow	24606	
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2024-2026
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Linlithgow sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

Action ID	Linlithgow	24607	
Action Type	Surface water management plan		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2



## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system have been identified. Next steps in managing such water ponding or over-whelmed drainage systems have been identified and should be implemented. The plan is to be reviewed and updated as needed.</p> <p>West Lothian Council published a high-level surface water management plan in 2015. The plan identifies a 'road-map' for the management of surface water flood risk and the need for further detailed studies. The plan should be kept under review and updated as new information becomes available. The local community will be advised of any resulting works.</p>
Funding	Not yet confirmed
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area.

## 02/10/13 (Livingston, Broxburn and Bathgate)

This area is designated as a potentially vulnerable area due to flood risk to a number of communities including Bathgate, Broxburn and Livingston. The main source of flooding is surface water and there is also risk from river flooding, including from the Brox Burn and Boghead Burn. Some protection is provided by flood protection scheme in Broxburn. There have been a number of reported floods, including surface water flooding in Bathgate during Storm Ciara in February 2020. Recently flooding affected Broxburn in August 2020.

There are 5 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Armadale	(target area 191)
Bathgate	(target area 196)
Broxburn	(target area 206)
Blackridge	(target area 282)
Livingston and Mid Calder	(target area 295)

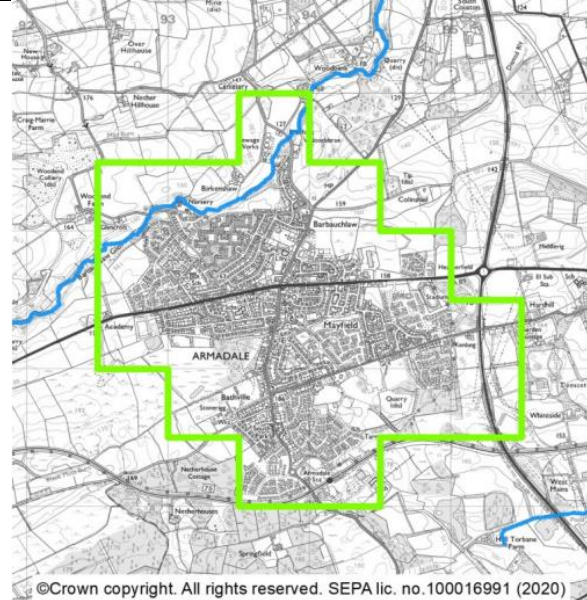
Local Flood Risk Management plan datasheet

Armadale (target area 191)

Summary

Armadale has been newly identified for inclusion in the 2021 flood risk management plans. Armadale is located within the West Lothian Council area. The main source of flooding is surface water. There are approximately 230 homes and businesses currently at risk of flooding. This is likely to increase to 320 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by a sewer flood risk assessment carried out by Scottish Water. There are several records of flooding in this area including a flood in August 2004 when surface water run-off caused flooding throughout Armadale.

Action ID	Armadale	19101
Action Type	Surface water management plan	

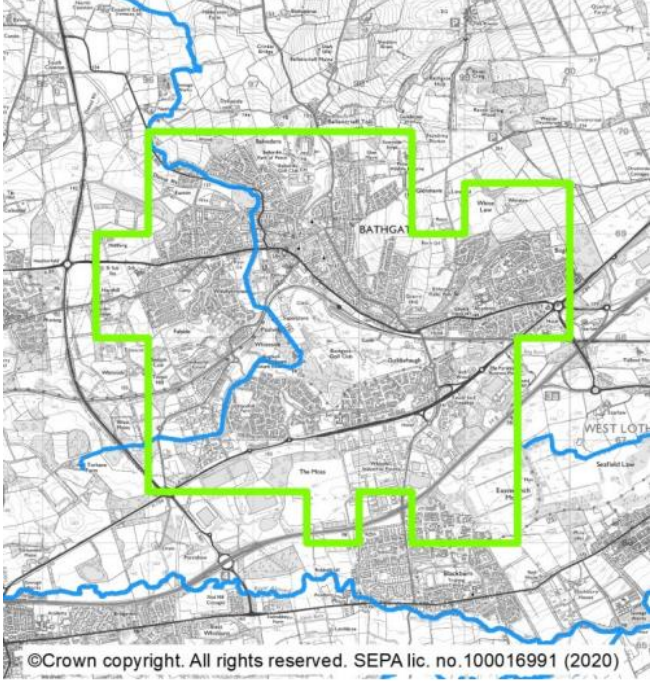
## Flood risk management plans: Forth Estuary Local Plan District (10)

Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A surface water management plan should be developed for Armadale to improve understanding of surface water flood risk. Current and long-term flood risk should be considered including how climate change may impact flood risk in the area. The local community will be advised of any resulting works.</p>		
Funding	West Lothian Council		
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area.		

Objective	ID	Description
Avoid flood risk	1911	Avoid inappropriate development that increases flood risk in Armadale
Prepare for flooding	1912	Prepare for current flood risk and future flooding as a result of climate change in Armadale
Reduce flood risk	1913	Reduce the risk of surface water flooding in Armadale

## Local Flood Risk Management plan datasheet

Bathgate (target area 196)

Summary	Location Map
<p>Bathgate is a town located west of Livingston, within the West Lothian Council area. The main source of flooding in Bathgate is surface water, however there is also a risk of river flooding from the Bog Burn, Boghead Burn and Bathgate Water. The local authority and Scottish Water have carried out flood studies in this area which identified approximately 150 homes and businesses at risk of flooding.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by a surface water management plan, an integrated catchment study and a sewer flood risk assessment carried out by the local authority and Scottish Water. There is a long history of flooding in this area, including surface water flooding in Bathgate during Storm Ciara in February 2020.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	1961	Avoid inappropriate development that increases flood risk in Bathgate
Prepare for flooding	1962	Prepare for current flood risk and future flooding as a result of climate change in Bathgate
Reduce flood risk	1963	Reduce the risk of surface water flooding in Bathgate
Reduce flood risk	1964	Reduce the risk of river flooding from Boghead Burn in Bathgate

Action ID	Bathgate 19601		
Action Type	Flood study		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>A cycle 1 river flood study for Bathgate is underway. A Water Environment Fund project (Bathgate Water Restoration) is underway in the area which could bring flooding benefits. The local community will be advised of any resulting works.</p>		
Funding	West Lothian Council		
Coordination	Action delivery lead is West Lothian Council and coordinated with the Water Environment Fund, Bathgate Water restoration project.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Bathgate 19602		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Bathgate and Blackburn sewer catchments in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

Action ID	Bathgate 19603		
Action Type	Surface water management plan		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>system have been identified. Next steps in managing such water ponding or over-whelmed drainage systems have been identified and should be implemented. The plan is to be reviewed and updated as needed.</p> <p>West Lothian Council published a high-level surface water management plan in 2015. The Plan identifies a 'road-map' for the management of surface water flood risk and the need for further detailed studies. The plan should be kept under review and updated as new information becomes available. The local community will be advised of any resulting works.</p>
Funding	West Lothian Council
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area



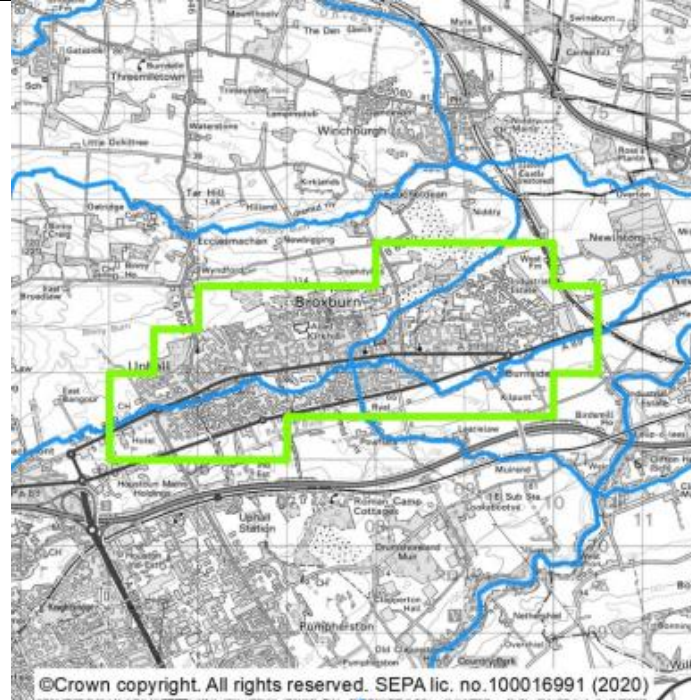
Local Flood Risk Management plan datasheet

Broxburn (target area 206)

Summary

The town of Broxburn is located immediately northeast of Livingston in the West Lothian Council area. The main source of flooding is surface water flooding, however there is also a risk from river flooding from the Liggat Syke and the Brox Burn. The local authority has carried out a flood study in this area which identified approximately 220 homes and businesses at risk of flooding.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding is improved by flood studies on the Liggat Syke and in support of the Broxburn Flood Protection Scheme delivered by the local authority. The national level assessment for surface water flooding is improved by a surface water management plan and a sewer flood risk assessment carried out by the local authority and Scottish Water. There are long and extensive records of flooding in this area. Several significant river and surface water floods occurred between 2000 and 2007 which resulted in the promotion of the Broxburn Flood Protection Scheme. Significant floods also

## Flood risk management plans: Forth Estuary Local Plan District (10)

occurred in 2008 and 2012 during construction of the scheme which now provides protection at Burnside, West Burnside and Blyth Road. On the 27 August 2020 extreme rainfall led to 21 properties being flooded from the Liggat Syke, whilst 7 properties near Illieston Castle also suffered surface water flood damage.

Objective	ID	Description
Avoid flood risk	2061	Avoid inappropriate development that increases flood risk in Broxburn
Avoid flood risk	2062	Avoid an increase in flood risk by the appropriate management and maintenance of the Broxburn Flood Protection Scheme along the Brox Burn
Improve data and understanding	2063	Improve data and understanding of the performance of the Broxburn Flood Protection Scheme
Prepare for flooding	2064	Prepare for current flood risk and future flooding as a result of climate change in Broxburn
Reduce flood risk	2065	Reduce the risk of surface water flooding in Broxburn
Reduce flood risk	2066	Reduce the risk of river flooding from Liggat Syke in Broxburn
Reduce flood risk	2067	Reduce the risk of river flooding from the Brox Burn in Broxburn West Main Street and New Holygate

Action ID	Broxburn 20601		
Action Type	Flood scheme or works design		
Action Delivery Lead	Action delivery lead is West Lothian Council in	Indicative Delivery	Cycle 2

## Flood risk management plans: Forth Estuary Local Plan District (10)

	coordination with Scottish Water.		
Description	<p>The selected preferred approach for managing flood risk is to be designed following the completion of the flood study, including consideration of the long-term impacts of climate change. These can include small scale works or works to improve catchment management. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>Detailed design for future phases of the flood protection scheme in Broxburn commenced in 2019 with local authority funding. Proposed works include Liggat Syke flood relief culvert and basin, property level protection scheme for New Holygate and Parkwood Gardens and West Burnside flood embankment. Stakeholder and public consultations are due to be carried out in these areas in 2021.</p>		
Funding	West Lothian Council		
Coordination	Action delivery lead is West Lothian Council in coordination with, Scottish Water and Scottish Canals.		

Action ID	Broxburn	20602
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery Cycle 2
Description	The flood scheme/works is to be built following agreement of the design, costs and timescales.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>The responsible authority proposes this action as the best viable option for managing flood risk in this community. The delivery of this action is subject to funding being made available.</p> <p>The future phases of Broxburn Flood Protection Scheme should continue to the construction phase. The future phases include the Liggat Syke flood relief culvert and Basin, property flood resilience scheme costs for New Holygate and Parkwood Gardens and West Burnside flood embankment.</p>
Funding	West Lothian Council
Coordination	Action delivery lead is West Lothian Council in coordination with SEPA, Scottish Water and Scottish Canals.

Action ID	Broxburn	20603
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery Cycle 2
Description	<p>The flood scheme/works is to be built following agreement of the design, costs and timescales.</p> <p>The legacy sustainable drainage systems project is to continue in partnership between the local authority and Scottish Water.</p>	
Funding	West Lothian Council	
Coordination	Action delivery lead is Scottish Water and coordinated with West Lothian Council and other actions in the area.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Broxburn 20604		
Action Type	Flood study (existing flood defences)		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>The performance and condition of the existing flood defences are to be evaluated, including consideration of the likely impacts of climate change. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A study is recommended to investigate the long-term performance and management of the existing flood protection scheme in Broxburn. The study may require survey of flood defences, data collection and flood modelling. The study should include a comprehensive assessment of the potential impacts of climate change and aim to develop a long-term plan to managing the flood defences. The local community will be advised of any resulting works.</p>		
Funding	West Lothian Council		
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD.		

Action ID	Broxburn 20605		
Action Type	Flood defence maintenance		
Action Delivery Lead	Action delivery lead is West Lothian Council in	Indicative Delivery	Cycle 2

## Flood risk management plans: Forth Estuary Local Plan District (10)

	coordination with Scottish Water.		
Description	<p>The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.</p> <p>Maintenance to the existing 2008 Broxburn Flood Protection Scheme should continue.</p>		
Funding	West Lothian Council		
Coordination	Action delivery lead is West Lothian Council and coordination will be determined once the actions have been finalised.		

Action ID	Broxburn	20606	
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2024-2026
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Newbridge sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Broxburn			20607
Action Type	Surface water management plan			
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2	
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system have been identified. Next steps in managing such water ponding or over-whelmed drainage systems have been identified and should be implemented. The plan is to be reviewed and updated as needed.</p> <p>West Lothian Council published a high-level surface water management plan in 2015. The Plan identifies a 'road-map' for the management of surface water flood risk and the need for further detailed studies. The plan should be kept under review and updated as new information becomes available. The local community will be advised of any resulting works</p>			
Funding	West Lothian Council			
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area.			



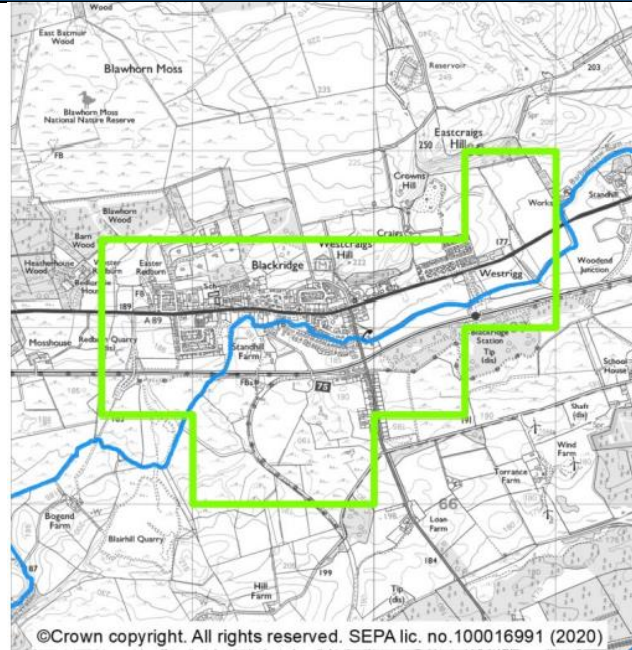
Local Flood Risk Management plan datasheet

Blackridge (target area 282)

Summary

Blackridge is located on the Barbauchlaw Burn in the West Lothian Council area. The main source of flooding is surface water flooding, however there is also a risk from river flooding. The local authority has carried out a flood study in this area which identified approximately 40 homes and businesses at risk from flooding. This is estimated to increase to approximately 70 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding is improved by a flood study for the Blackridge area carried out by the local authority. There have been several recorded floods in the Blackridge area. In February 2017 a blocked culvert caused the Barbauchlaw Burn to overflow and inundate the local community centre with flood water.



## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2821	Avoid inappropriate development that increases flood risk in Blackridge
Prepare for flooding	2822	Prepare for current flood risk and future flooding as a result of climate change in Blackridge
Reduce flood risk	2823	Reduce the risk of river flooding from the Barbauchlaw Burn and surface water flooding in Blackridge

Action ID	Blackridge 28201		
Action Type	Data Collection		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>Equipment that measures rainfall, river levels, erosion, ground levels or wave height may be installed and maintained to improve our understanding of flood risk. This can be done over short term or to measure longer term impacts.</p> <p>West Lothian Council should continue current efforts in data collection and monitoring to improve the confidence in flood sources, mechanisms and risk relating to river flooding from the Barbauchlaw Burn. The new data should be used to update the existing flood risk assessment as deemed necessary.</p>		
Funding	West Lothian Council		
Coordination	SEPA will work with the local authority on the potential to coordinate opportunities for joint data collection activities.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Blackridge 28202		
Action Type	Flood study		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The flood protection study for the Barbauchlaw Burn was completed in 2019. The study should be updated once more hydrological information is available to confirm the understanding of flood risk.</p>		
Funding	West Lothian Council		
Coordination	Action delivery lead is West Lothian Council and coordination will be determined once the actions have been finalised.		

Action ID	Blackridge 28203		
Action Type	Flood scheme or works implementation		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>The flood scheme/works is to be built following agreement of the design, costs and timescales.</p> <p>The recommendations of the flood study should be taken forward to reduce surface water flood risk in Blackridge in the longer term.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	These include surface water works and consideration of natural flood management opportunities. Delivery of this action is subject to achieving a positive benefit to cost ratio, and sufficient funding being made available.
Funding	West Lothian Council
Coordination	Action delivery lead is West Lothian Council and coordination will be determined once the actions have been finalised.

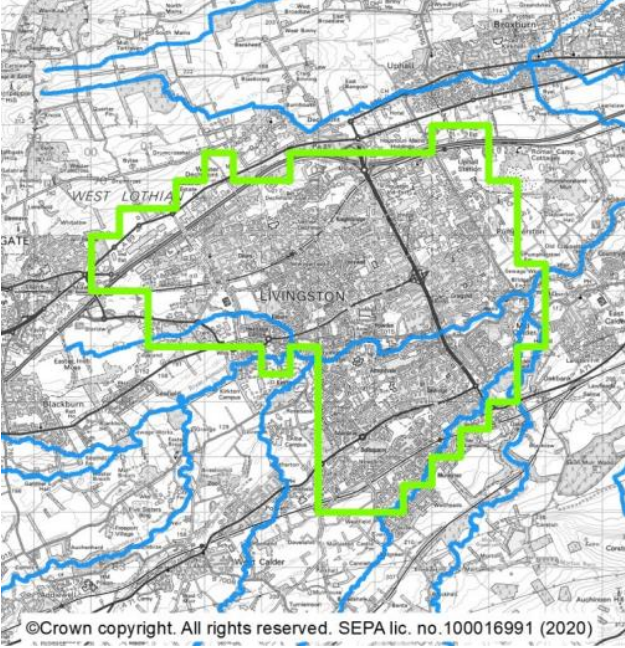
Action ID	Blackridge	28204
Action Type	Surface water management plan	
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A surface water management plan should be developed for Blackridge to improve understanding of surface water flood risk. Current and long-term flood risk should be considered including how climate change may impact flood risk in the area. The local community will be advised of any resulting works.</p>	
Funding	West Lothian Council	

Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area
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## Local Flood Risk Management plan datasheet

Livingston and Mid Calder (target area 295)

Summary	Location Map
<p>Livingston and Mid Calder lie on the River Almond, within the West Lothian Council area. The main source of flooding in Livingston and Mid Calder is surface water. The local authority has carried out a flood study in this area which identified approximately 260 homes and businesses at risk of flooding.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water is improved by a surface water management plan and a sewer flood risk assessment carried out by the local authority and Scottish Water. There are a number of records of surface water flooding in the Livingston and Mid Calder area. Over a number of years some homes and businesses have been affected by surface water flooding in Murieston Gardens, most recently in August 2020.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2951	Avoid inappropriate development that increases flood risk in Livingston and Mid Calder
Prepare for flooding	2952	Prepare for current flood risk and future flooding as a result of climate change in Livingston and Mid Calder
Reduce flood risk	2953	Reduce the risk of surface water flooding in Livingston and Mid Calder

Action ID	Livingston and Mid Calder 29501		
Action Type	Flood scheme or works design		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	<p>The selected preferred approach for managing flood risk is to be designed following the completion of the flood study, including consideration of the long-term impacts of climate change. These can include small scale works or works to improve catchment management. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>The legacy sustainable drainage systems project should continue as appropriate.</p>		
Funding	West Lothian Council		
Coordination	Action delivery lead is Scottish Water in coordination with West Lothian Council and other actions in the area.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Livingston and Mid Calder 29502		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2024-2026
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes East Calder and Livingston sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

Action ID	Livingston and Mid Calder 29503		
Action Type	Surface water management plan		
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery	Cycle 2
Description	Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>system have been identified. Next steps in managing such water ponding or over-whelmed drainage systems have been identified and should be implemented. The plan is to be reviewed and updated as needed.</p> <p>West Lothian Council published a high-level surface water management plan in 2015. The plan identifies a 'road-map' for the management of surface water flood risk and the need for further detailed studies. The plan should be kept under review and updated as new information becomes available. The local community will be advised of any resulting works.</p>
Funding	West Lothian Council
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area.



## 02/10/14 (Whitburn)

This area is designated as a potentially vulnerable area due to flood risk to Blackburn and Whitburn. The main source of flooding is surface water and river flooding to Whitburn from the White Burn. Recent flooding has been caused by surface water flooding and affected a number of roads.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Blackburn	(target area 197)
Whitburn	(target area 325)

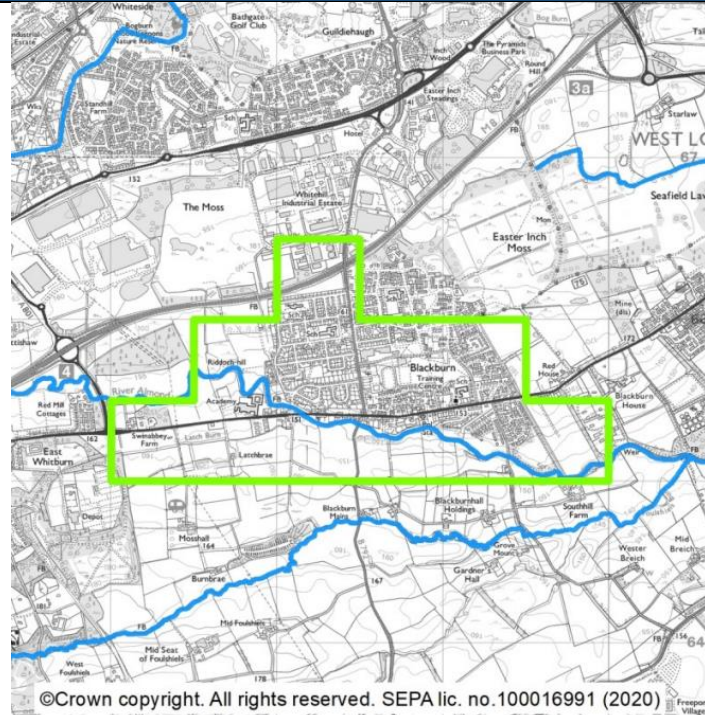
## Local Flood Risk Management plan datasheet

Blackburn (target area 197)

## Summary

Blackburn has been newly identified for inclusion in the 2021 flood risk management plans. Blackburn is a town located just south of Bathgate and within the West Lothian Council area. The main source of flooding in Blackburn is surface water flooding, and there is also a risk from river flooding from the River Almond. There are approximately 120 homes and businesses currently at risk from flooding. This is likely to increase to 150 homes and businesses by the 2080s due to climate change.

## Location Map



## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by a sewer flood risk assessment carried out by Scottish Water. There are records of flooding for this area. Flooding in the area is commonly caused by surface water leading to flooding of roads and footpaths.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	1971	Avoid inappropriate development that increases flood risk in Blackburn
Prepare for flooding	1972	Prepare for current flood risk and future flooding as a result of the effects of climate change in Blackburn
Reduce flood risk	1973	Reduce the risk of surface water flooding in Blackburn

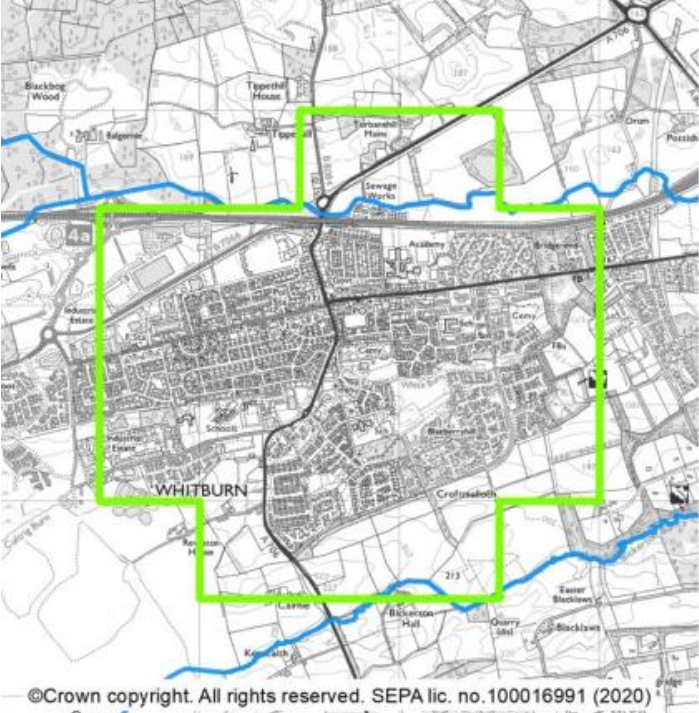
Action ID	Blackburn	19701	
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2024-2026
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Blackburn sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Blackburn	19702
Action Type	Surface water management plan	
Action Delivery Lead	Action delivery lead is West Lothian Council in coordination with Scottish Water.	Indicative Delivery Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A surface water management plan should be developed for Blackburn to improve understanding of surface water flood risk. Current and long-term flood risk should be considered including how climate change may impact flood risk in the area. The local community will be advised of any resulting works.</p>	
Funding	West Lothian Council	
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area	

## Local Flood Risk Management plan datasheet

Whitburn (target area 325)

Summary	Location Map
<p>Whitburn is a town located close to the River Almond in the West Lothian Council area. The main source of flooding in Whitburn is surface water and river flooding from the White Burn. There are approximately 470 homes and businesses currently at risk from all sources of flooding. This is likely to increase to 570 homes and businesses by the 2080s due to climate change. The local authority has carried out a flood study which clarified flood risk from the White Burn. The study identified 24 homes and businesses at risk of flooding from the White Burn.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding is improved by a flood study for the White Burn and the ongoing flow monitoring on the White Burn. Understanding of surface water flooding

## Flood risk management plans: Forth Estuary Local Plan District (10)

is improved by a surface water management plan also carried out by the local authority. There is a history of flooding in this area. In 2014 a blocked culvert caused the White Burn to overflow flooding several properties. The Dixon Terrace area experienced minor surface water flooding in 2017.

Objective	ID	Description
Avoid flood risk	3251	Avoid inappropriate development that increases flood risk in Whitburn
Prepare for flooding	3252	Prepare for current flood risk and future flooding as a result of climate change in Whitburn
Improve data and understanding	3253	Improve data and understanding of river flooding in Whitburn
Reduce flood risk	3254	Reduce the risk of surface water flooding in Whitburn

Action ID	Whitburn			32501
Action Type	Surface water management plan			
Action Delivery Lead	West Lothian Council	Indicative Delivery	Cycle 2	
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A surface water management plan should be developed for Whitburn to improve understanding of surface water flood risk. Current and long-term flood risk should be considered including how climate</p>			

## Flood risk management plans: Forth Estuary Local Plan District (10)

	change may impact flood risk in the area. The local community will be advised of any resulting works.
Funding	West Lothian Council
Coordination	Action delivery lead is West Lothian Council and coordination will be carried out with Scottish Water and other actions in the area.

Action ID	Whitburn	32502
Action Type	Data collection	
Action Delivery Lead	West Lothian Council	Indicative Delivery Cycle 2
Description	<p>Equipment that measures rainfall, river levels, erosion, ground levels or wave height may be installed and maintained to improve our understanding of flood risk. This can be done over short term or to measure longer term impacts.</p> <p>West Lothian Council should continue current efforts in data collection and monitoring to improve the confidence in flood sources, mechanisms and risk relating to river flooding from the White Burn. The new data should be used to update the existing flood risk assessment as deemed necessary.</p>	
Funding	West Lothian Council	
Coordination	SEPA will work with the local authority on the potential to coordinate opportunities for joint data collection activities.	

## 02/10/15 (West Calder and Fauldhouse)

This area is designated as a potentially vulnerable area due to flood risk to Fauldhouse and West Calder from surface water. There are several records of flooding in this area, primarily from surface water.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Fauldhouse	(target area 229)
West Calder	(target area 323)



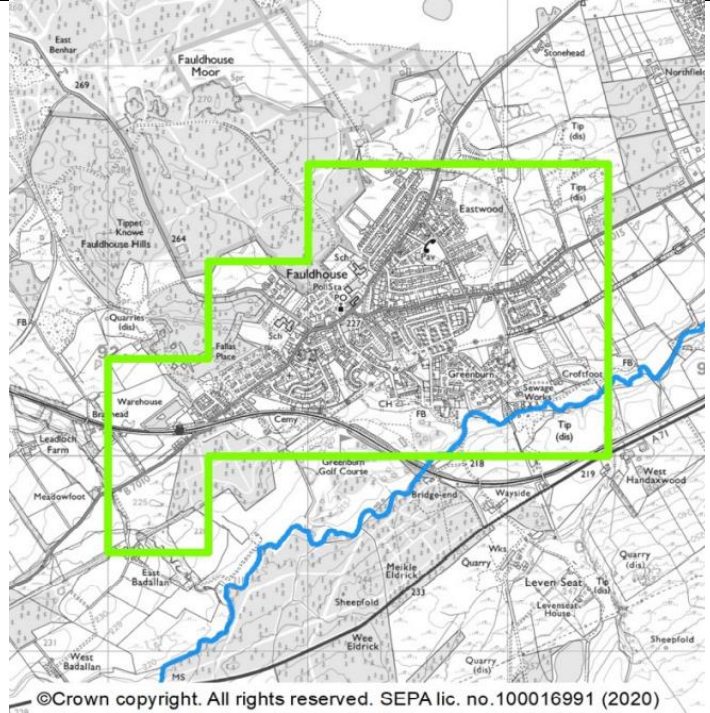
## Local Flood Risk Management plan datasheet

Fauldhouse (target area 229)

## Summary

Fauldhouse has been newly identified for inclusion in the 2021 flood risk management plans. It is located in the West Lothian Council area. The main source of flooding is surface water. There are approximately 80 homes and businesses currently at risk from flooding. This is likely to increase to 110 homes and businesses by the 2080s due to climate change.

## Location Map



## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. This information has highlighted the risk of flooding in this target area. There is a number of records of surface water flooding in Fauldhouse due to run-off from higher ground. In 2012 a flood affected numerous gardens and some commercial premises in the Eldrick Avenue, Bridge Street and Greenburn Road area. Greenburn Golf Club was also affected.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2291	Avoid inappropriate development that increases flood risk in Fauldhouse
Prepare for flooding	2292	Prepare for current flood risk and future flooding as a result of climate change in Fauldhouse
Reduce flood risk	2293	Reduce the risk of surface water flooding in Fauldhouse

Action ID	Fauldhouse 22901		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2024-2026
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Fauldhouse sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Fauldhouse	22902
Action Type	Surface water management plan	
Action Delivery Lead	West Lothian Council	Indicative Delivery Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A surface water management plan should be developed for Fauldhouse to improve understanding of surface water flood risk. Current and long-term flood risk should be considered including how climate change may impact flood risk in the area. The local community will be advised of any resulting works.</p>	
Funding	West Lothian Council	
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area.	

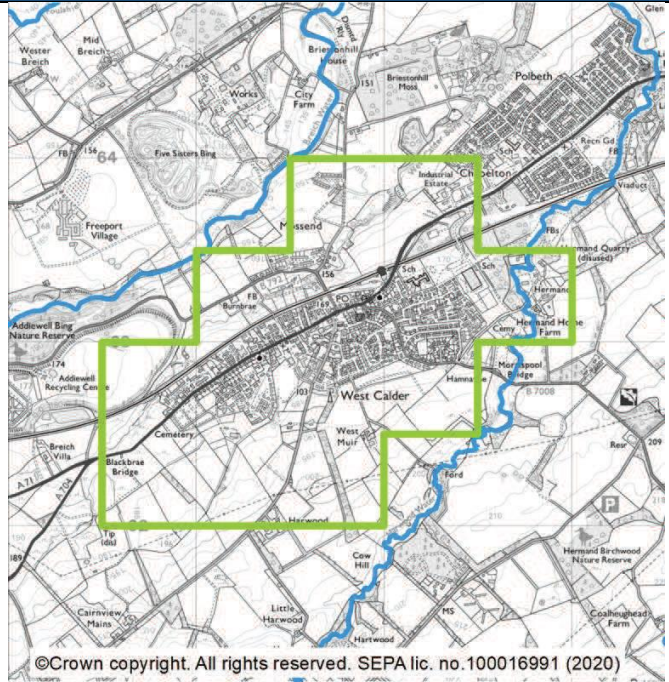
Local Flood Risk Management plan datasheet

West Calder (target area 323)

Summary

West Calder has been newly identified for inclusion in the 2021 flood risk management plans. West Calder is a town located approximately 6km west of Livingston, within the West Lothian Council area. The main source of flooding in West Calder is surface water, with a small proportion of risk from river flooding. There are approximately 110 homes and businesses currently at risk from flooding. This is estimated to increase to over 120 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. This information has highlighted the risk of flooding in this target area. There are a number of records of flooding in this area, mainly resulting from surface water flooding. The first significant flood recorded occurred in July 2002, when surface water run-off and river overtopping caused localised flooding. A 2005 flood resulted in increased attenuation near West Calder Community Centre. Further flooding was recorded in July 2013, when a flash flood combined with blocked drains resulted in significant flooding to homes, businesses and roads.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3231	Avoid inappropriate development that increases flood risk in West Calder
Prepare for flooding	3232	Prepare for current flood risk and future flooding as a result of climate change in West Calder
Reduce flood risk	3233	Reduce the risk of surface water flooding in West Calder

Action ID	West Calder 32301		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2024-2026
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes East Calder sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	Outputs of this modelling assessment will be shared with local authorities.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	West Calder	32302
Action Type	Surface water management plan	
Action Delivery Lead	West Lothian Council	Indicative Delivery Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>A surface water management plan should be developed for West Calder to improve understanding of surface water flood risk. Current and long-term flood risk should be considered including how climate change may impact flood risk in the area. The local community will be advised of any resulting works.</p>	
Funding	West Lothian Council	
Coordination	Action delivery lead is West Lothian Council in coordination with Scottish Water and other actions in the area.	

## 02/10/16 (Slamannan)

This area is designated as a potentially vulnerable area due to flood risk to Slamannan. The main source of flooding is surface water and river flooding from the Culloch Burn. There is a history of flooding in this area, with frequent river and surface water flooding affecting homes and roads.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

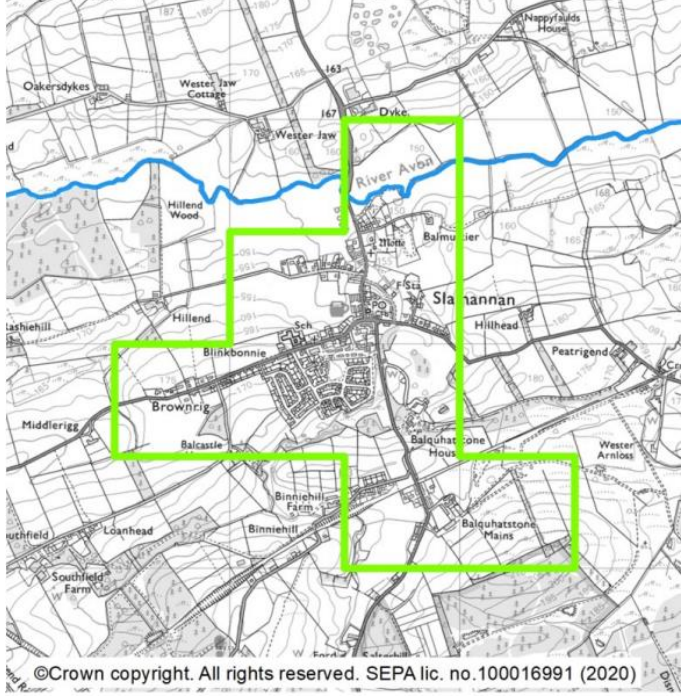
Slamannan

(target area 314)



Local Flood Risk Management plan datasheet

Slamannan (target area 314)

Summary	Location Map
<p>Slamannan is a village located on the banks of the Culloch Burn in the Falkirk Council area. The main sources of flooding in Slamannan are river and surface water flooding. There are approximately 80 people and 50 homes and businesses currently at risk from flooding.</p>	

What is the Current understanding of Flood risk

This section provides a summary of information which has helped to develop an understanding of flood risk in the area. Since 2011, SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding has been improved by an integrated catchment study. There are frequent records of flooding in this area from surface water and the Culloch Burn. Surface water flooding results from runoff from fields and sewerage issues.

Objective	ID	Description
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## Flood risk management plans: Forth Estuary Local Plan District (10)

Avoid flood risk	3141	Avoid inappropriate development that increases flood risk in Slamannan
Prepare for flooding	3142	Prepare for current flood risk and future flooding as a result of climate change in Slamannan
Reduce flood risk	3143	Reduce the risk of river flooding from the Culloch Burn and surface water flooding in Slamannan

Action ID	Slamannan 31401		
Action Type	Flood Study		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>A flood protection study is to be progressed for this area to assess options to manage flood risk. Options should include a combination of structural and non-structural elements including natural flood management. The assessment should consider these actions in combination and the impacts on flood risk upstream and downstream of each action.</p>		
Funding	Falkirk Council Revenue budget		
Coordination	Falkirk Council will appoint a consultant to assist with the delivery of this project. Falkirk Council will liaise with SEPA, responsible authorities, landowners and other agencies where required.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Slamannan 31402		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2025-2027
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes Slammanan sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

Action ID	Slamannan 31403		
Action Type	Surface water management plan		
Action Delivery Lead	Falkirk Council	Indicative Delivery	Before 2028
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>The Strategic Surface Water Management Plan (SSWMP) has been developed for the Falkirk Council area as part of our statutory obligations within the Flood Risk Management (Scotland) Act 2009. Slamannan has been noted as a hotspot and will be included within Falkirk Council Flooding five-year programme to complete the SWMP's for our hotspots. GFPS will undertake the majority of the modelling for this area.</p>
Funding	Falkirk Council Revenue budget
Coordination	Falkirk Council will work in coordination with Scottish Water

Action ID	Slamannan 31404		
Action Type	Community engagement		
Action Delivery Lead	Responsible authorities	Indicative Delivery	Ongoing
Description	<p>Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.</p> <p>Community engagement opportunities will be sought where possible with the community organisations of Slamannan regarding improving community resilience.</p>		
Funding	To be identified depending on actions		
Coordination	Responsible authorities will work in coordination with the Scottish Flood Forum		

## 02/10/17 (Edinburgh West)

This area is designated as a potentially vulnerable area due to flood risk to Edinburgh Airport and the western part of Edinburgh including South Gyle and Edinburgh Park. The main sources of flooding are surface water and river flooding from the Gogar Burn. There is a history of flooding in this area, with frequent reports of surface water flooding, including in June 2019 when surface water flooding caused significant transport disruption to road, tram and rail services and flooding to properties.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Edinburgh west	(target area 264)
Edinburgh Airport	(target area 310)

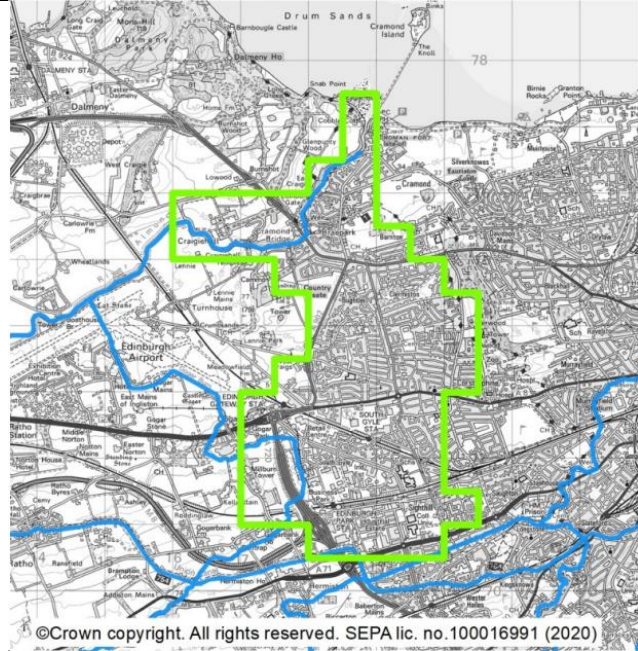
Local Flood Risk Management plan datasheet

Edinburgh West (target area 264)

Summary

Edinburgh west covers the western edge of the city of Edinburgh, including Cramond Bridge, Corstorphine, South Gyle and Edinburgh Park. The main sources of flooding are surface water and river flooding. There are approximately 5,000 people and 2,800 homes and businesses currently at risk from flooding. This is likely to increase to 5,900 people and 3,300 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for surface water by an integrated catchment study and a sewer flood risk assessment. There are records of flooding in this area from rivers and surface water.

Objective	ID	Description
Avoid flood risk	2641	Avoid inappropriate development that increases flood risk in Edinburgh west

## Flood risk management plans: Forth Estuary Local Plan District (10)

Prepare for flooding	2642	Prepare for current flood risk and future flooding as a result of climate change in Edinburgh west
Reduce flood risk	2643	Reduce the risk of flooding from the Gogar Burn to homes and businesses in Edinburgh west
Reduce flood risk	2644	Reduce the risk of surface water flooding in Edinburgh west

Action ID	Edinburgh West 26401		
Action Type	Flood Study		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Before 2028
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The proposed flood study for the Gogar Burn should be undertaken. This should include flood modelling and a high-level assessment of actions. The impacts of climate change on flood risk should be evaluated and if found to be significant then an adaptation plan may be required to consider how the area will adapt to future changes in flood risk.</p>		
Funding	City of Edinburgh and SEPA		
Coordination	Action delivery lead is City of Edinburgh Council and coordinated with Edinburgh Airport and SEPA and any other relevant projects in the area.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh West 26402		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	Outputs of this modelling assessment will be shared with local authorities.		

Action ID	Edinburgh West 26403		
Action Type	Surface water management plan		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Updated SWMP to be developed by 2025
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A high level surface water management plan has been produced for the Edinburgh area. City of Edinburgh Council should continue to further develop priorities for the management of surface water flood risk in the city. The results of the integrated catchment study and sewer flood risk assessment should be considered. Current and long term flood risk should be assessed and how the city will adapt to changes in flood risk due to climate change should be considered.</p>
Funding	City of Edinburgh Council
Coordination	Action delivery lead is City of Edinburgh Council in coordination with Scottish Water.

Action ID	Edinburgh West	26404
Action Type	Community engagement	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Ongoing
Description	<p>Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.</p> <p>Awareness raising should be developed based on the findings of the flood studies and surface water management plan.</p>	
Funding	To be identified depending on actions	
Coordination	Action delivery lead is City of Edinburgh Council in coordination with the Scottish Flood Forum.	



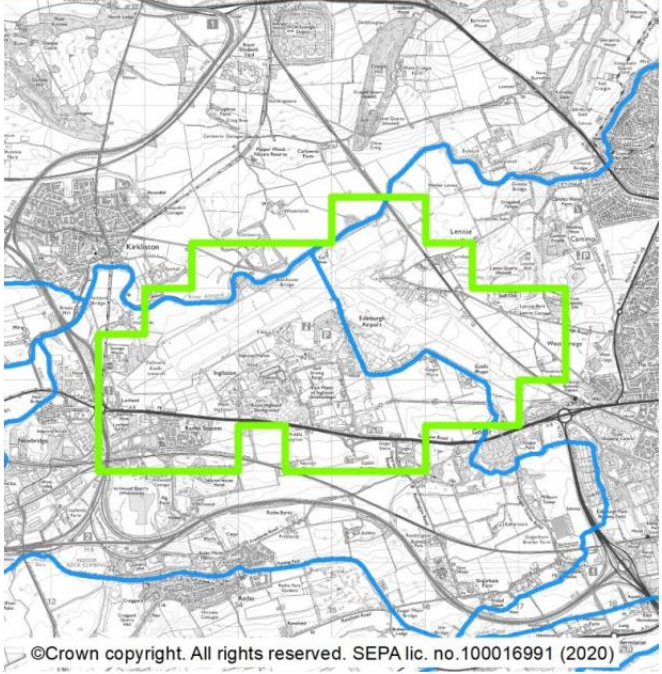
## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh West 26405		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Ongoing
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Almond flood warning scheme.</p>		
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will maintain the Almond flood warning scheme. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.		

Action ID	Edinburgh West 26406		
Action Type	Flood study		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Cycle 3
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>A flood study for River Almond is to be carried out as part of future activities.</p>		
Funding	City of Edinburgh Council		
Coordination	Action delivery lead is City of Edinburgh Council and coordination will be determined once the actions have been finalised.		

## Local Flood Risk Management plan datasheet

Edinburgh Airport (target area 310)

Summary	Location Map
<p>Edinburgh Airport and surrounding business and residential areas are located to the west of Edinburgh city centre. The main source of flooding is from river flooding, however there is also a risk of surface water flooding. There are approximately 20 people and 190 homes and businesses currently at risk of flooding. This is likely to increase to 30 people and 210 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for surface water flooding by an integrated catchment study and a sewer flood risk assessment. There are records of flooding in this area from the River Almond and surface water. The most recent flood was recorded in February 2020 when heavy rain during Storm Ciara caused surface water flooding at the airport tram terminus, preventing tram travel to and from the airport.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3101	Avoid inappropriate development that increases flood risk to Edinburgh Airport and the surrounding area
Prepare for flooding	3102	Prepare for current flood risk and future flooding as a result of climate change at Edinburgh Airport

Action ID	Edinburgh Airport			31001
Action Type	Flood study			
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	2028	
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The proposed flood study for the Gogar Burn should be carried out to improve understanding of river flood risk. The study should include modelling and high-level assessment of actions to manage flood risk. Current and future flood risk should be considered and how the area may adapt to the impacts of climate change. As the study includes a small area of Edinburgh Airport, joint working between City of Edinburgh Council and the Edinburgh Airport may be required.</p>			
Funding	City of Edinburgh Council, SEPA			
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with Edinburgh Airport.			

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh Airport 31002		
Action Type	Community engagement		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk. Awareness raising should be developed based on the outcomes of the flood study.		
Funding	To be identified depending on actions		
Coordination	Action delivery lead is the City of Edinburgh Council and the responsible authorities in coordination with the Scottish Flood Forum.		

Action ID	Edinburgh Airport 31003		
Action Type	Emergency plan		
Action Delivery Lead	Edinburgh Airport	Indicative Delivery	Ongoing
Description	The plan to coordinate responses to emergency incidents between organisations, including local authorities, the emergency services and SEPA, is to be maintained and executed as required. Edinburgh airport should continue to operate their flood emergency plan. The plan should be reviewed and updated periodically.		
Funding	Edinburgh Airport		
Coordination	Finalised action delivery lead is Edinburgh Airport.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh Airport 31004		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh and Newbridge sewer catchments in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	Outputs of this modelling assessment will be shared with local authorities.		

## 02/10/18 (South Queensferry)

This area is designated as a potentially vulnerable area due to coastal flood risk to South Queensferry. There are some records of floods in this area.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

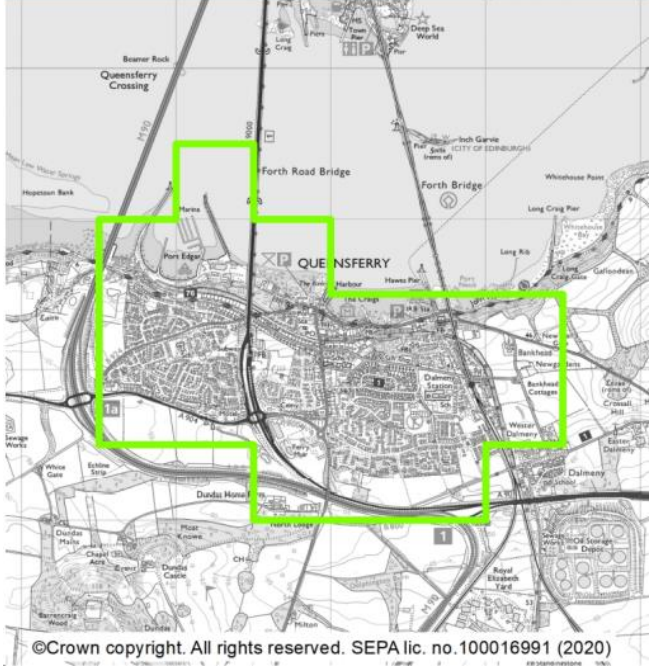
### List of target areas

South Queensferry

(target area 315)

Local Flood Risk Management plan datasheet

South Queensferry (target area 315)

Summary	Location Map
<p>The town of South Queensferry is located to the west of Edinburgh, along the southern shore of the Firth of Forth. It is in the City of Edinburgh Council area. The main source of flooding in the South Queensferry area is coastal flooding. There are approximately 130 people and 80 homes and businesses currently at risk from flooding. This is likely to remain approximately the same for people and increase to 90 homes and businesses by the 2080s due to climate change.</p>	

What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national assessment is the main source of flood risk information in this area. There are limited records of surface water flooding in this area but that does not confirm that there is no flood risk.

Objective	ID	Description
Avoid flood risk	3151	Avoid inappropriate development that increases flood risk in South Queensferry

## Flood risk management plans: Forth Estuary Local Plan District (10)

Prepare for flooding	3152	Prepare for current flood risk and future flooding as a result of climate change in South Queensferry
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Action ID	South Queensferry 31501		
Action Type	Surface water management plan		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Updated SWMP to be developed by 2025
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>A high-level surface water management plan has been produced for the Edinburgh area. City of Edinburgh Council should continue to further develop priorities for the management of surface water flood risk in the city. The results of the integrated catchment study and sewer flood risk assessment should be considered. Current and long-term flood risk should be assessed and how the city will adapt to changes in flood risk due to climate change should be considered.</p>		
Funding	City of Edinburgh Council		
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with Scottish Water.		



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	South Queensferry 31502		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will continue to update flood maps based on new information. This action is required to improve the confidence in flood sources and flood risk. This could include modelling and mapping to improve representation of coastal flooding on SEPA maps and understanding of climate change impacts.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

## 02/10/19 (Edinburgh north)

This area is designated as a potentially vulnerable area due to flood risk to parts of northern Edinburgh including Cramond, Silverknowes and Granton. The main source of flooding is surface water and coastal. The coastal area of Granton includes coastal flood protection which reduce the risk to this area. There are a few records of flooding in this area, including significant coastal flooding.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Edinburgh north

(target area 265)

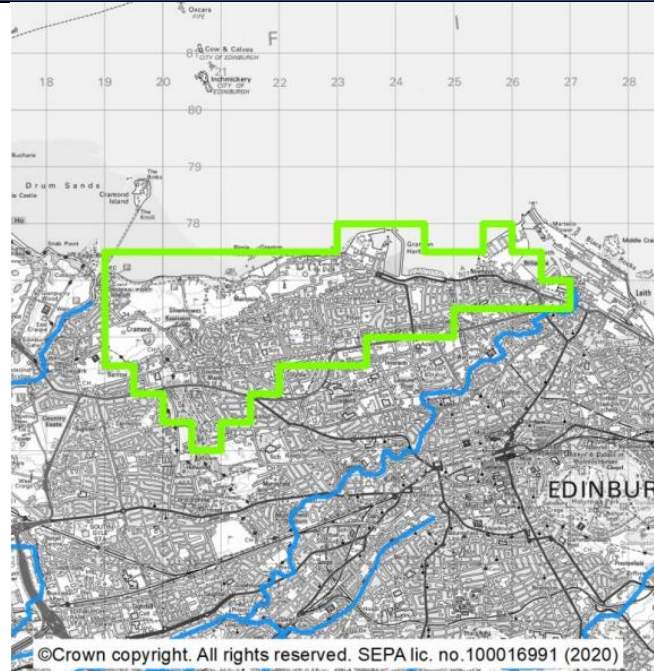
Local Flood Risk Management plan datasheet

Edinburgh North (target area 265)

Summary

The Edinburgh north area is located on the south shore of the Firth of Forth, and includes the Cramond, Silverknowes and Granton areas of the Edinburgh City. The main source of flooding is surface water, however there is also risk from coastal flooding. There are approximately 4,800 people and 2,400 homes and businesses currently at risk from flooding. This is likely to increase to 6,800 people and 3,510 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for surface water flooding by an integrated catchment study and a sewer flood risk assessment. There are records of flooding in this area including coastal flooding.

## Flood risk management plans: Forth Estuary Local Plan District (10)

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	2651	Avoid inappropriate development that increases flood risk in Edinburgh north
Avoid flood risk	2652	Avoid an increase in flood risk by the appropriate management and maintenance of the existing flood defences along the coast in Cramond, Silverknowes and Granton
Improve data and understanding	2653	Improve data and understanding of the performance of coastal flood defences along the north coast of Edinburgh (Granton, Silverknowes and Cramond)
Prepare for flooding	2654	Prepare for current flood risk and future flooding as a result of climate change in Edinburgh north
Reduce flood risk	2655	Reduce the risk of surface water flooding in Edinburgh north

Action ID	Edinburgh North 26501		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be		

Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	Funding for this action is secured within Scottish Water's business plan.
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA.</p>

Action ID	Edinburgh North	26502
Action Type	Surface water management plan	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Updated SWMP to be developed by 2025
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>A high-level surface water management plan has been produced for the Edinburgh area. City of Edinburgh Council should continue to further develop priorities for the management of surface water flood</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	risk in the city. The results of the integrated catchment study and sewer flood risk assessment should be considered. Current and long-term flood risk should be assessed and how the city will adapt to changes in flood risk due to climate change should be considered.
Funding	City of Edinburgh Council
Coordination	Action delivery lead is City of Edinburgh Council in coordination with Scottish Water.

Action ID	Edinburgh North	26503
Action Type	Community engagement	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk. Community engagement should be developed based on the findings of the surface water management plan.	
Funding	To be identified depending on actions	
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with the responsible authorities and the Scottish Flood Forum.	

Action ID	Edinburgh North	26504
Action Type	Flood defence maintenance	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery City of Edinburgh Council
Description	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition. Maintenance of the existing coastal flood defences along the Cramond, Silverknowes and Granton coast should continue.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	City of Edinburgh Council
Coordination	Action delivery lead is the City of Edinburgh Council and coordination will be determined once the actions have been finalised.

Action ID	Edinburgh North	26505
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>	
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning scheme. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	

Action ID	Edinburgh North	26506
Action Type	Strategic mapping improvement	
Action Delivery Lead	SEPA	Indicative Delivery 2023-2026
Description	<p>SEPA will continue to update flood maps based on new information.</p> <p>SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. SEPA will progress with</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.

Action ID	Edinburgh North	26507
Action Type	Flood study (existing flood defences)	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Cycle 3 or beyond
Description	<p>The performance and condition of the existing flood defences are to be evaluated, including consideration of the likely impacts of climate change. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A flood study is required to investigate the performance and long-term management of the existing coastal flood defences along the Cramond, Silverknowes and Granton coast. The study may require survey of flood defences, data collection and flood modelling. The study should include a comprehensive assessment of the potential impacts of climate change and aim to develop an adaptation plan for management of the flood defences.</p>	
Funding	City of Edinburgh Council	
Coordination	Action delivery lead is the City of Edinburgh Council and coordination will be determined once the actions have been finalised.	



## 02/10/20 (Edinburgh, Water of Leith)

This area is designated as a potentially vulnerable area due to risk to parts of central and southwestern Edinburgh including Stockbridge, Murrayfield and Longstone. There is risk of river flooding from the Water of Leith and Murray Burn as well as surface water. Water of Leith Flood Protection Scheme offers protection to this area. There is a long history of flooding in this area, including a combined river and surface water flood in June 2019, which flooded properties and roads. In 2003, a significant flood on the Water of Leith affected many areas of Edinburgh and resulted in the flood protection scheme.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

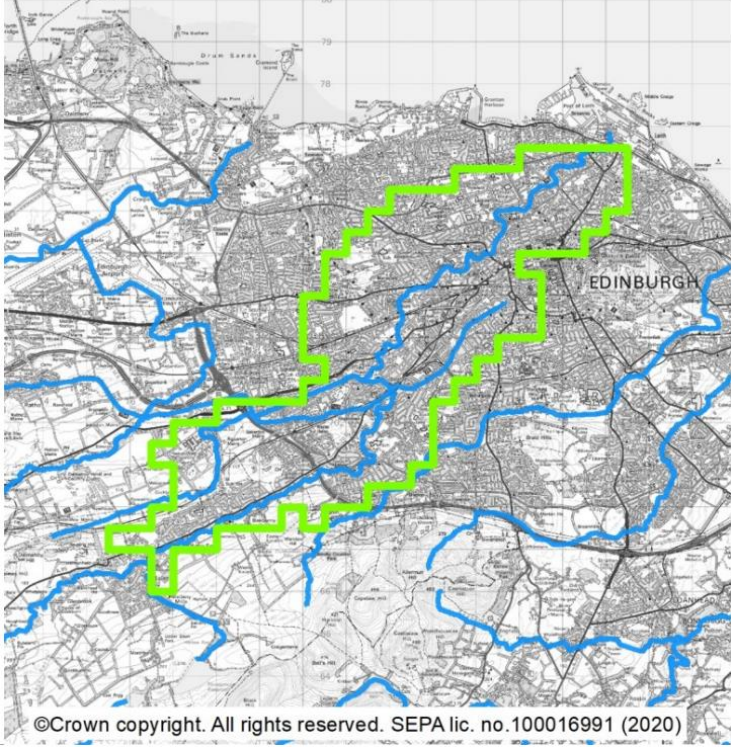
### List of target areas

Edinburgh Water of Leith

(target area 266)

## Local Flood Risk Management plan datasheet

Edinburgh Water of Leith (target area 266)

Summary	Location Map
<p>The Edinburgh Water of Leith area covers a large section of central Edinburgh and includes the Water of Leith and the Union Canal. The main sources of flooding are surface water and river flooding. There are approximately 28,000 people and 15,000 homes and businesses at risk from flooding. This is likely to increase to 40,000 people and 22,000 homes and businesses by the 2080s due to climate change.</p>	 <p>©Crown copyright. All rights reserved. SEPA lic. no.100016991 (2020)</p>

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for river flooding by the flood study in support of the Water of Leith Flood Protection Scheme and a flood study of the Water of Leith basin completed by the local authority in 2018. Understanding of surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There is a long history of flooding from river and surface water with a notable river flood in 2003 which led to the construction of the flood scheme on Water of Leith.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2661	Avoid inappropriate development that increases flood risk in Edinburgh
Avoid flood risk	2662	Avoid an increase in flood risk by the appropriate management and maintenance of the Water of Leith Flood Protection Scheme
Improve data and understanding	2663	Improve data and understanding of flooding in Edinburgh following the construction of phase 2 Water of Leith Flood Protection Scheme
Prepare for flooding	2664	Prepare for current flood risk and future flooding as a result of climate change in Edinburgh
Reduce flood risk	2665	Reduce the risk of surface water flooding in Edinburgh
Reduce flood risk	2666	Reduce the risk of river flooding from the Water of Leith in Coltbridge, Gorgie and Saughton in Edinburgh

Action ID	Edinburgh Water of Leith 26601		
Action Type	Flood study		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Cycle 3
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>A flood modelling study is to be carried out looking at the coastal impact at the downstream boundary of Water of Leith to quantify flood risk. The study may develop further depending on the outcome of flood risk investigations.</p>		
Funding	City of Edinburgh Council		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	Action delivery lead is the City of Edinburgh Council and coordination will be determined once the actions have been finalised. SEPA will work with the local authority on the potential to coordinate this action with flood warning actions.
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Action ID	Edinburgh Water of Leith	26602
Action Type	Flood scheme or works implementation	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Dependant on Government funding, no timescales for delivery
Description	The flood scheme/works is to be built following agreement of the design, costs and timescales. City of Edinburgh Council will explore the development of further flood scheme or works to the Water of Leith, in line with the updated study and revised flood risk. The delivery of this action is subject to funding being made available. Current and long term flood risk should be assessed and how the flood scheme will adapt to changes in flood risk due to climate change should be considered.	
Funding	To be identified	
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD and flood warning actions.	

Action ID	Edinburgh Water of Leith	26603
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2023-2025
Description	The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	Funding for this action is secured within Scottish Water's business plan
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA.</p>

Action ID	Edinburgh Water of Leith	26604
Action Type	Surface water management plan	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Updated SWMP to be developed by 2025
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>A high-level surface water management plan has been produced for the Edinburgh area. City of Edinburgh Council should continue to further develop priorities for the management of surface water flood risk in the city. The results of the integrated catchment study and sewer</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	flood risk assessment should be considered. Current and long-term flood risk should be assessed and how the city will adapt to changes in flood risk due to climate change should be considered.
Funding	City of Edinburgh Council
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with Scottish Water.

Action ID	Edinburgh Water of Leith	26605
Action Type	Community engagement	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk. Awareness raising should be developed based on the outcomes of the surface water management plan and flood studies.	
Funding	To be identified depending on actions	
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with responsible authorities and the Scottish Flood Forum.	

Action ID	Edinburgh Water of Leith	26606
Action Type	Flood defence maintenance	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Ongoing
Description	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition. Maintenance to the Water of Leith Flood Protection Scheme including the reservoirs in the upper catchment of the Water of Leith should continue. Updates to the maintenance regime are to be made based on	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	the findings of flood studies. The as built drawings (Murrayfield and Roseburn), should be provided to SEPA, who will assess the need for updates to the flood warning scheme, flood maps and the Scottish Flood Defence Asset database.
Funding	City of Edinburgh Council
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD and flood warning actions.

Action ID	Edinburgh Water of Leith	26607
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery First half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>	
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with City of Edinburgh Council on the potential to coordinate flood warning improvements with the Water of Leith flood study and flood scheme development. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh Water of Leith 26608		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate flood warning improvements with the flood studies. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.		



## 02/10/21 (Edinburgh, Braid Burn)

This area is designated as a potentially vulnerable area due to flood risk to central and eastern Edinburgh including Leith, Portobello and Colinton. There is flood risk from the Braid Burn, as well as risk from coastal and surface water. The Braid Burn Flood Protection Scheme was completed by the local authority in 2010 and offers protection to many areas. Coastal protection measures protect many areas in Leith and Portobello. There is a history of flooding from various sources, including recent floods caused by surface water.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

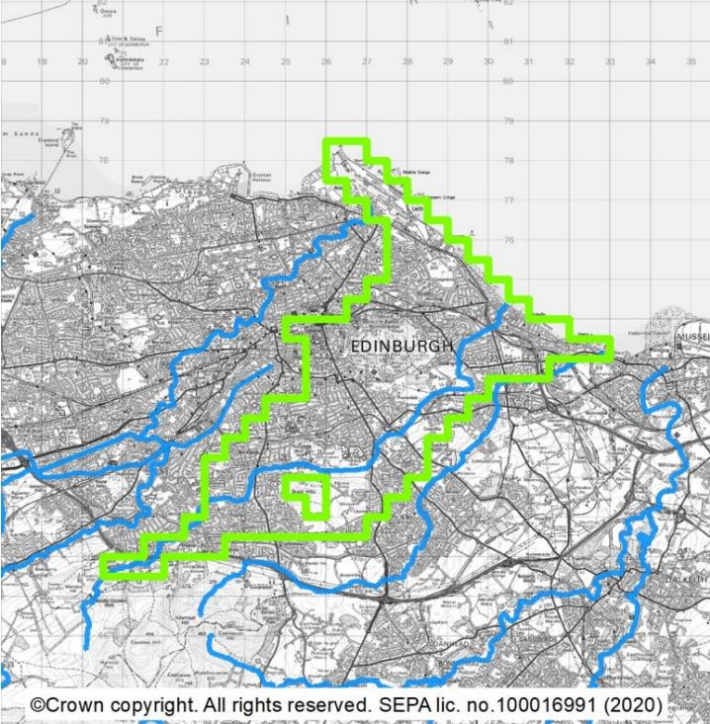
### List of target areas

Edinburgh Braid Burn

(target area 267)

## Local Flood Risk Management plan datasheet

Edinburgh, Braid Burn (target area 267)

Summary	Location Map
<p>The Braid Burn area is located within the City of Edinburgh. A small part of the catchment extends beyond Edinburgh towards East Lothian. The main source of flooding in this area is from surface water, however there is also risk from river and coastal flooding. The risk of flooding from the Braid Burn is reduced by the Braid Burn Flood Protection Scheme. There are approximately 12,000 people and 6,500 homes and businesses currently at risk from flooding. This is likely to increase to 18,000 people and 9,400 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

"This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for river flooding by the flood study developed in support of the Braid Burn Flood Protection Scheme. Understanding of surface water

flooding is improved by an integrated catchment study and a sewer flood risk assessment. There is a long history of flooding in this area with a notable flood in April 2000 when the Braid Burn burst its banks. Since then, flooding from the Braid Burn has been reduced through the construction of flood defences.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion. "

Objective	ID	Description
Avoid flood risk	2671	Avoid an increase in flood risk by the appropriate management and maintenance of the Braid Burn flood protection scheme
Avoid flood risk	2672	Avoid inappropriate development that increases flood risk in Edinburgh
Avoid flood risk	2673	Avoid an increase in flood risk by the appropriate management and maintenance of the coastal flood defences in Leith and Portobello
Improve data and understanding	2674	Improve data and understanding of the performance of the Braid Burn flood protection scheme in relation to climate change
Improve data and understanding	2675	Improve data and understanding of the performance of the coastal flood defences in Leith and Portobello
Prepare for flooding	2676	Prepare for current flood risk and future flooding as a result of climate change in Edinburgh
Reduce flood risk	2677	Reduce the risk of surface water flooding in Edinburgh

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh Braid Burn 26701		
Action Type	Flood study		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	2028
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The flood study is to include a review of existing flood defences and natural flood management. A review is required to assess the performance of the Braid Burn Flood Protection Scheme and the coastal flood defences in the Leith and Portobello areas of Edinburgh in relation to climate change. Regarding the Braid Burn Flood Protection Scheme, a review may be required to assess the need for rain or river gauges. Post flood surveys may be required to collect data on flooding mechanisms, risk and damage caused. This study will help to inform the flood asset management plan that City of Edinburgh Council are developing. Current and future risk and asset performance should be considered, and the information used to develop an adaptation plan.</p>		
Funding	City of Edinburgh		
Coordination	SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD and flood warning actions.		

Action ID	Edinburgh Braid Burn 26702		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	Funding for this action is secured within Scottish Water's business plan
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA</p>

Action ID	Edinburgh Braid Burn	26703
Action Type	Surface water management plan	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery Updated SWMP to be developed by 2025
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	A high-level surface water management plan has been produced for the Edinburgh area. City of Edinburgh Council should continue to further develop priorities for the management of surface water flood risk in the city. The results of the integrated catchment study and sewer flood risk assessment should be considered. Current and long-term flood risk should be assessed and how the city will adapt to changes in flood risk due to climate change should be considered.
Funding	City of Edinburgh Council
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with Scottish Water.

Action ID	Edinburgh Braid Burn	26704
Action Type	Flood study (options appraisal)	
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery 2028
Description	<p>In areas where flood risk is confirmed, a range of possible options to manage flood risk are to be identified, including natural flood management actions where suitable, and a preferred approach is to be chosen. This should include adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>The joint integrated catchment study to identify potential options to reduce surface water and sewer flooding will be extended to include a wider area across the Jordan and Braid Burn catchments.</p>	
Funding	City of Edinburgh Council	
Coordination	Action delivery leads are Scottish Water and City of Edinburgh Council with coordination from SEPA through the Edinburgh and Lothians Strategic Drainage Partnership.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh Braid Burn 26705		
Action Type	Community engagement		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk. Awareness raising should be developed based on the outcome of the flood studies and surface water management plan.		
Funding	To be identified depending on actions		
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with responsible authorities and the Scottish Flood Forum.		

Action ID	Edinburgh Braid Burn 26706		
Action Type	Flood defence maintenance		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Ongoing
Description	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition. Maintenance to the Braid Burn Flood Protection Scheme and to the Leith and Portobello coastal defences should continue. Updates to the maintenance regime should be made based on the findings of the flood study. City of Edinburgh Council are currently developing a flood asset management plan.		
Funding	City of Edinburgh Council		
Coordination	Action delivery lead is the City of Edinburgh Council and coordination will be determined once the actions have been finalised.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Edinburgh Braid Burn 26707		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	SEPA will continue to update flood maps based on new information. SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.		

Action ID	Edinburgh Braid Burn 26708		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Ongoing
Description	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required. SEPA should maintain the Braid Burn flood warning scheme.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the City of Edinburgh Council on the potential to use information from the flood study to inform ongoing flood warning.		



	SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.
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## 02/10/22 (Edinburgh, Niddrie Burn and Burdiehouse)

This area is designated as a potentially vulnerable area due to flood risk to west and southwest Edinburgh including Niddrie, Burdiehouse and Straiton. The main source of flooding is surface water and river flooding from the Niddrie Burn and Burdiehouse Burn. A number of floods have been reported in this area including recent surface water flooding to roads.

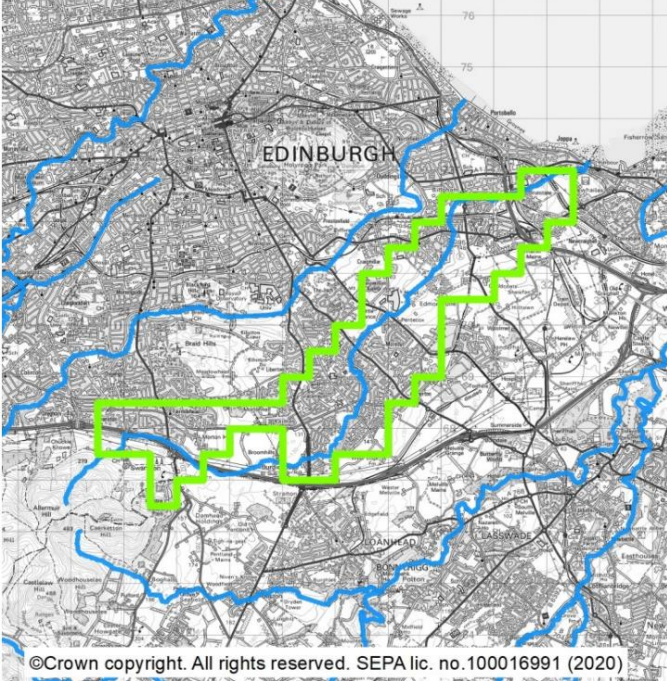
There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Edinburgh Niddrie Burn and Burdiehouse	(target area 268)
Straiton	(target area 329)

## Local Flood Risk Management plan datasheet

Edinburgh Niddrie Burn &amp; Burdiehouse (target area 268)

Summary	Location Map
<p>The Edinburgh Niddrie Burn and Burdiehouse area is part of southeast Edinburgh. The main source of flooding in the area is surface water, however there is also risk of river flooding. There are approximately 2,300 people and 1,200 homes and businesses currently at risk from flooding. This is likely to increase to 2,700 people and 1,400 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for surface water flooding by an integrated catchment study and a sewer flood risk assessment. Rain gauges and flow meters have been installed in the Niddrie Burn by the local authority, with data being collected and recorded for a period of 2 years to improve understanding of river flooding. There are a number of records of past flooding in the Edinburgh Niddrie Burn and Burdiehouse area, mostly from surface water.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2681	Avoid inappropriate development that increases flood risk in Edinburgh
Avoid flood risk	2682	Avoid an increase in flood risk by the appropriate management and maintenance of the flood control structure and flood storage area at Greendykes and flood defences at Nether Craigour
Improve data and understanding	2683	Improve data and understanding of flooding from the Niddrie Burn in Edinburgh
Prepare for flooding	2684	Prepare for current flood risk and future flooding in Edinburgh as a result of climate change
Reduce flood risk	2685	Reduce the risk of flooding from the Niddrie Burn to homes and businesses in Edinburgh / Burdiehouse
Reduce flood risk	2686	Reduce the risk of surface water flooding in Edinburgh

Action ID	Edinburgh Niddrie Burn & Burdiehouse 26801		
Action Type	Data collection		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Ongoing
Description	<p>Equipment that measures rainfall, river levels, erosion, ground levels or wave height may be installed and maintained to improve our understanding of flood risk. This can be done over short term or to measure longer term impacts.</p> <p>Collection of rain data via installed rain gauges should continue to improve understanding of flood risk in the Niddrie Burn catchment. The data will be used in the proposed flood study.</p>		
Funding	City of Edinburgh Council		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	SEPA will work with the local authority on the potential to coordinate opportunities for joint data collection activities.
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Action ID	Edinburgh Niddrie Burn & Burdiehouse 26802		
Action Type	Flood study		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Completed in Cycle 1 2021
Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>The ongoing data collected for the Niddrie Burn should be used in taking forward the proposed flood study to completion as scheduled. The study should include modelling of flood risk and high level assessment of actions to manage flood risk. Performance of the flood control structure and flood storage area at Greendykes and flood defences at Nether Craigour should be reviewed. The impacts of climate change on flood risk and asset performance should be assessed and an adaptation plan should be developed.</p>		
Funding	City of Edinburgh Council		
Coordination	SEPA will work with the local authority on the potential to coordinate opportunities for joint data collection activities.		

Action ID	Edinburgh Niddrie Burn & Burdiehouse 26803		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	Funding for this action is secured within Scottish Water's business plan
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA</p>

Action ID	Edinburgh Niddrie Burn & Burdiehouse 26804		
Action Type	Surface water management plan		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Updated SWMP to be developed by 2025
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>A high-level surface water management plan has been produced for the Edinburgh area. City of Edinburgh Council should continue to further develop priorities for the management of surface water flood risk in the city. The results of the integrated catchment study and</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	sewer flood risk assessment should be considered. Current and long-term flood risk should be assessed and how the city will adapt to changes in flood risk due to climate change should be considered.
Funding	City of Edinburgh Council
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with Scottish Water.

Action ID	Edinburgh Niddrie Burn & Burdiehouse 26805		
Action Type	Community engagement		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Ongoing
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk. Awareness raising should be developed based on the findings of the flood study and surface water management plan.		
Funding	To be identified depending on actions		
Coordination	Action delivery lead is the City of Edinburgh Council in coordination with the responsible authorities and the Scottish Flood Forum.		

Action ID	Edinburgh Niddrie Burn & Burdiehouse 26806		
Action Type	Flood defence maintenance		
Action Delivery Lead	City of Edinburgh Council	Indicative Delivery	Ongoing
Description	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition. Maintenance to the flood control structure and flood storage area at Greendykes and flood defences at Nether Craigour should continue.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Updates to the maintenance regime should be made based on the findings of the flood study.
Funding	City of Edinburgh for Niddrie flood storage areas. ERI for formal defences around hospital and Nethercraigour.
Coordination	Action delivery lead is the asset owner and coordination will be determined once the actions have been finalised.



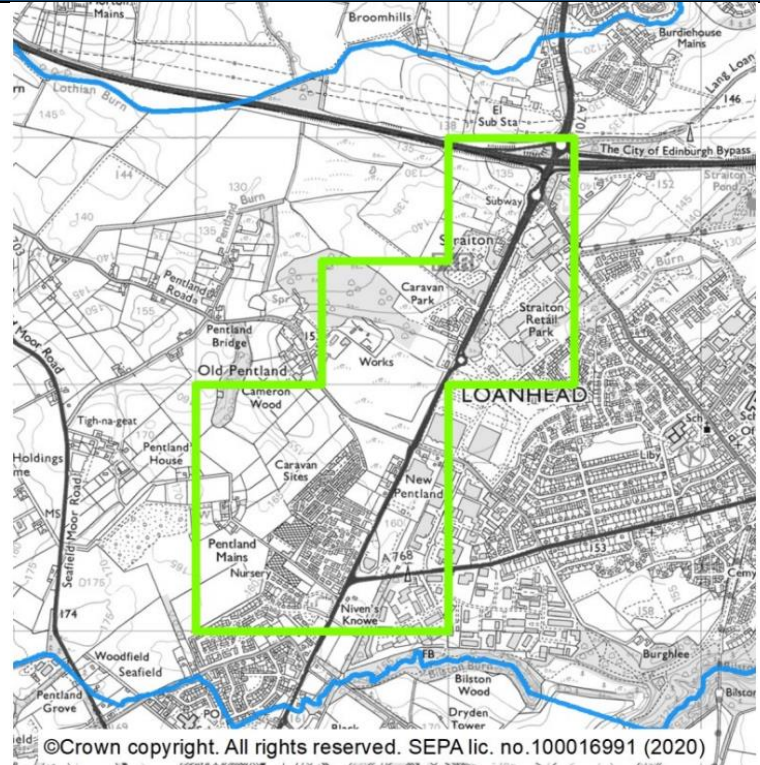
Local Flood Risk Management plan datasheet

Straiton (target area 329)

Summary

Straiton lies just south of the Edinburgh Bypass and is within the Midlothian Council area. The only source of flooding in Straiton is from surface water. There are approximately 80 people and 50 homes and businesses currently at risk of flooding. This is estimated to increase to 110 people and 70 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. A flood was recorded in the Straiton area in April 2000, when a section of the A701 road at Straiton was closed due to flooding.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3291	Avoid inappropriate development that increases flood risk in Straiton
Prepare for flooding	3292	Prepare for current flood risk and future flooding as a result of climate change in Straiton
Reduce flood risk	3293	Reduce the risk of surface water flooding in Straiton

Action ID	Straiton 32901		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Straiton 32902		
Action Type	Surface water management plan		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or overwhelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>Following the completion of the integrated catchment study, the local authority should prepare a strategic surface water management plan to determine high risk areas of surface water flooding across the Midlothian Council area. Current and long-term flood risk should be considered and include the assessment of the potential impacts of climate change.</p>		
Funding	Midlothian Council		
Coordination	Action delivery lead is Midlothian Council in coordination with Scottish Water.		

## 02/10/23 (Musselburgh)

This area is designated as a potentially vulnerable area due to flood risk to Musselburgh and northeast part of Dalkeith. The main source of flooding in Musselburgh is the River Esk and coastal flooding. There is also risk from surface water across the area. There is a history of flooding in this area including coastal flooding and river flooding to homes and businesses.

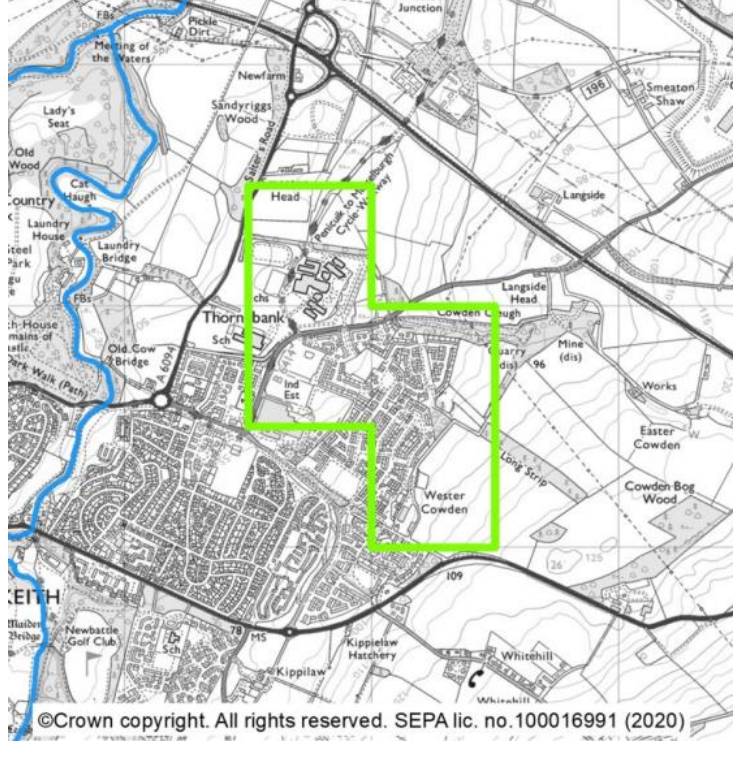
There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Dalkeith (north east)	(target area 263)
Musselburgh	(target area 304)

## Local Flood Risk Management plan datasheet

Dalkeith [north east] (target area 263)

Summary	Location Map
<p>The Dalkeith north east area covers the north east corner of the town of Dalkeith in the Midlothian Council area. The main source of flooding in Dalkeith north east is surface water. There are approximately 40 people and 30 homes and businesses currently at risk from flooding. This is likely to increase to 80 people and 50 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are no records of flooding in this target area but this does not confirm that there is no flood risk.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2631	Avoid inappropriate development that increases flood risk in Dalkeith (north east)
Prepare for flooding	2632	Prepare for current flood risk and future flooding as a result of climate change in Dalkeith (north east)
Reduce flood risk	2633	Reduce the risk of surface water flooding in Dalkeith (north east)

Action ID	Dalkeith [north east] 26301		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Midlothian Council	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority. Outputs of this modelling assessment will be shared with local authorities and SEPA.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Dalkeith [north east] 26302		
Action Type	Surface water management plan		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>Following the completion of the integrated catchment study, the local authority should prepare a strategic surface water management plan to determine high risk areas of surface water flooding across the Midlothian Council area. Current and long-term flood risk should be considered and include the assessment of the potential impacts of climate change.</p>		
Funding			
Coordination	Action delivery lead is Midlothian Council in coordination with Scottish Water.		



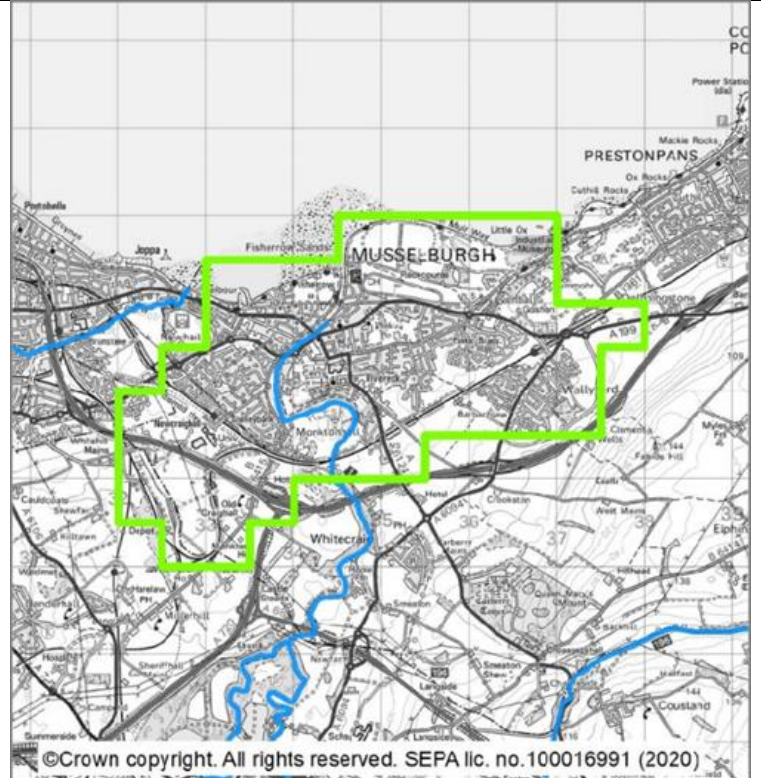
Local Flood Risk Management plan datasheet

Musselburgh (target area 304)

Summary

Musselburgh is a town located east of Edinburgh at the mouth of the River Esk and on the south side of the Firth of Forth. It is located within the East Lothian Council area. The main source of flooding in Musselburgh is river flooding, however there is also risk from surface water and coastal flooding. There are approximately 5,200 people and 2,700 homes and businesses currently at risk from flooding. This is likely to increase to 6,900 people and 3,500 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and sewer flood risk assessment. A detailed flood study, covering river, coastal and surface water flooding, has been developed in Cycle 1 as part of the Musselburgh Flood Protection Scheme. There is a history of flooding in this area with recent records of minor floods in 2013, 2014, 2017 and 2018.



## Flood risk management plans: Forth Estuary Local Plan District (10)

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid Flood Risk	3041	Avoid inappropriate development that increases flood risk in Musselburgh
Avoid Flood Risk	3042	Avoid an increase in flood risk by the appropriate management and maintenance of the Musselburgh Flood Protection Scheme
Prepare For Flooding	3043	Prepare for current flood risk and future flooding as a result of climate change in Musselburgh
Reduce Flood Risk	3044	Reduce the risk of flooding from surface water, coastal and the River Esk in Musselburgh

Action ID	Musselburgh	30401
Action Type	Flood scheme or works implementation	
Action Delivery Lead	East Lothian Council	Indicative Delivery Cycle 2
Description	<p>Musselburgh Flood Protection Scheme was allocated funding as a prioritised flood protection scheme in Cycle 1 and has progressed to Stage 4 (Outline Design).</p> <p>The development of a flood protection scheme in Musselburgh should continue and advance the scheme's outline design through the timescales and key decision points identified in the Outline Design Timeline.</p> <p>The scheme should continue to Detailed Design and Construction.</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	Scottish Government / East Lothian Council / Sustrans Progress dependent on funding arrangements.
Coordination	East Lothian Council / Sustrans / SEPA / Scottish Government / Scottish Water.  SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD and flood warning actions.

Action ID	Musselburgh	30402
Action Type	Flood defence maintenance	
Action Delivery Lead	East Lothian Council	Indicative Delivery Cycle 2 / 3
Description	East Lothian Council and appropriate asset owners should inspect and maintain existing flood defences and East Lothian Council should inspect and maintain the Musselburgh Flood Protection Scheme, as appropriate, if and when formally approved and completed.	
Funding	Asset owners.  East Lothian Council yearly capital and/or revenue budgets, as required.	
Coordination	East Lothian Council / Asset owners.	

Action ID	Musselburgh	30403
Action Type	Community engagement	
Action Delivery Lead	East Lothian Council	Indicative Delivery Cycle 2

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>Detailed community engagement will continue to progress as an essential element of the development of the Musselburgh Flood Protection Scheme.</p> <p>Please refer to the Musselburgh Flood Protection Scheme website for further information on engagement and consultation.</p>
Funding	East Lothian Council
Coordination	East Lothian Council / Scottish Water

Action ID	Musselburgh	30404
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan.	
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Musselburgh 30405		
Action Type	Surface water management plan		
Action Delivery Lead	East Lothian Council in coordination with Scottish Water	Indicative Delivery	Cycle 2
Description	<p>The development of a surface water management plan for Musselburgh, following the outcomes of the integrated catchment study, which will assess local surface water flooding issues.</p> <p>Information on flood risk previously developed as part of the Musselburgh Flood Protection Scheme should be considered.</p> <p>Climate change impacts should be considered.</p>		
Funding	<p>No capital funding currently allocated.</p> <p>Previously a Cycle 1 action but due to follow Integrated Catchment Study (ICS) / Sewer Flood Risk Assessment (FRA).</p>		
Coordination	<p>Co-ordination and timing to be discussed between East Lothian Council and Scottish Water.</p> <p>East Lothian Council considering delivering a SWMP focussed on individual areas.</p>		

Action ID	Musselburgh 30406		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood scheme development. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.

Action ID	Musselburgh	30407
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery Ongoing
Description	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.  SEPA should maintain the Esk (Lothians) flood warning scheme.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with East Lothian Council on the potential to use information on the Musselburgh flood protection scheme to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Musselburgh	30408
Action Type	Strategic mapping improvements	
Action Delivery Lead	SEPA	Indicative Delivery 2023-2026
Description	<p>SEPA will continue to update flood maps based on new information.</p> <p>SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.</p>	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.	

## 02/10/24 (Dalkeith, Lasswade and Newtongrange)

This area is designated as a potentially vulnerable area due to flood risk to Bonnyrigg, Dalkeith, Lasswade and Newtongrange. The main source of flooding in the area is surface water, and there is also risk of flooding to Lasswade from the River North Esk. There is history of flooding in some of these communities, more recently a number of minor floods from surface water.

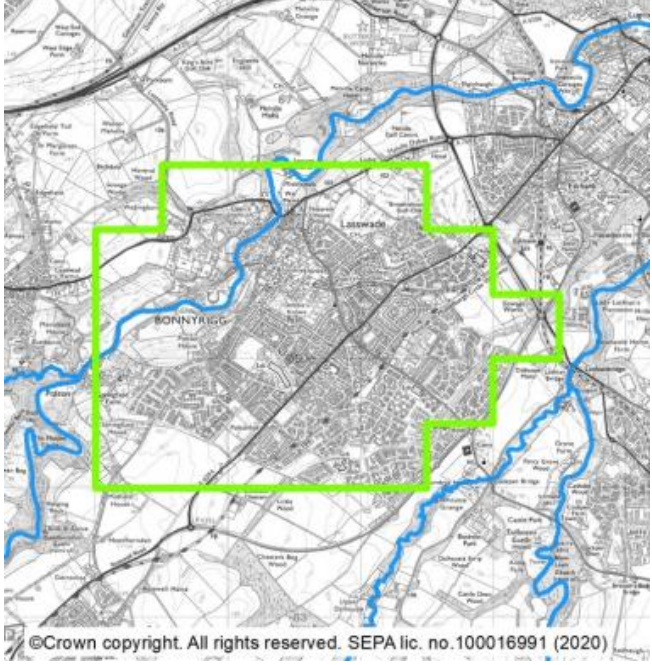
There are 4 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Bonnyrigg and Lasswade	(target area 202)
Dalkeith	(target area 219)
Loanhead	(target area 296)
Newtongrange	(target area 300)

Local Flood Risk Management plan datasheet

Bonnyrigg and Lasswade (target area 202)

Summary	Location Map
<p>Bonnyrigg and Lasswade are located in Midlothian, southeast of Edinburgh. The main source of flooding to Bonnyrigg is from surface water. The main risk of flooding to Lasswade is river flooding. There are approximately 680 people and 350 homes and businesses at risk of flooding. This is estimated to rise to 920 people and 470 homes and businesses by the 2080s due to climate change.</p>	

What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study. There is some history of flooding in this area.

Objective	ID	Description
Avoid Flood Risk	2021	Avoid inappropriate development that increases flood risk in Bonnyrigg



## Flood risk management plans: Forth Estuary Local Plan District (10)

Prepare for flooding	2022	Prepare for current flood risk and future flooding as a result of climate change in Bonnyrigg
Reduce flood risk	2023	Reduce the risk of river flooding from the River North Esk in Lasswade
Reduce flood risk	2024	Reduce the risk of surface water flooding in Bonnyrigg and Lasswade

Action ID	Bonnyrigg and Lasswade 20201		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan		
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Bonnyrigg and Lasswade 20202		
Action Type	Surface water management plan		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood, and managed.</p> <p>Following the completion of the integrated catchment study, the local authority should prepare a strategic surface water management plan to determine high risk areas of surface water flooding across the Midlothian Council area. Current and long-term flood risk should be considered and include the assessment of the potential impacts of climate change.</p>		
Funding	Midlothian Council		
Coordination	Action delivery lead is Midlothian Council in coordination with Scottish Water.		

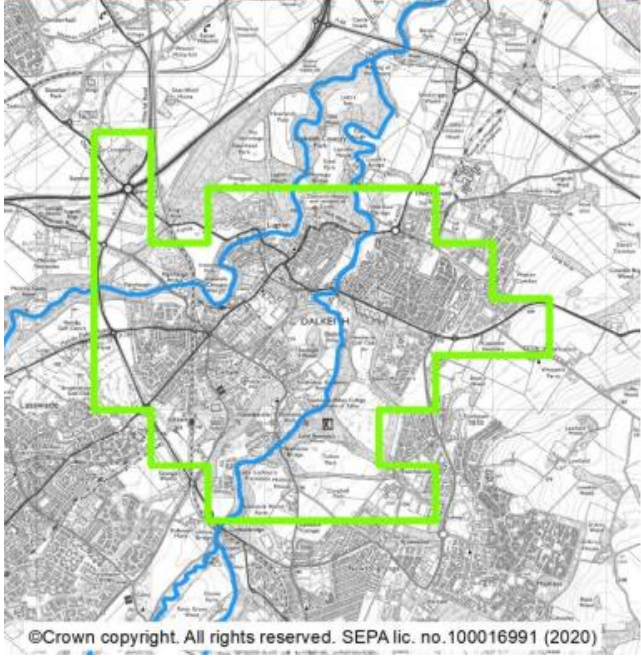
Action ID	Bonnyrigg and Lasswade 20203		
Action Type	Flood study		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.</p> <p>A cycle 1 flood study should be carried out and include the initial stage of flood modelling. Flood risk should be quantified for present day and future flood risk. The interaction between surface water and river flooding should be assessed. If flood risk is confirmed, potential options to address flood risk should be investigated. Current and long-term flood risk should be considered and include the assessment of the potential impacts of climate change.</p>
Funding	Midlothian Council
Coordination	Action delivery lead is Midlothian Council and coordination will be determined once the actions have been finalised.

## Local Flood Risk Management plan datasheet

Dalkeith (target area 219)

Summary	Location Map
<p>Dalkeith is located on the rivers South Esk and North Esk and is within the Midlothian Council area. The main source of flooding in Dalkeith is surface water. There is limited risk from river flooding which is not considered significant. There are approximately 600 people and 350 homes and businesses currently at risk from flooding. This is likely to increase to 880 people and 500 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There is some history of flooding in this area.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2191	Avoid inappropriate development that increases flood risk in Dalkeith
Prepare for flooding	2192	Prepare for current flood risk and future flooding as a result of climate change in Dalkeith
Reduce flood risk	2193	Reduce the risk of surface water flooding in Dalkeith and Eskbank

Action ID	Dalkeith 21901		
Action Type	Flood study		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	An understanding of flood risk and associated issues in the area is to be developed, which may include surveys and modelling and should consider the impacts of climate change on flood risk.		
Funding	Midlothian Council		
Coordination	Action delivery lead is Midlothian Council and coordination will be determined once the actions have been finalised.		

Action ID	Dalkeith 21902		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be		

## Flood risk management plans: Forth Estuary Local Plan District (10)

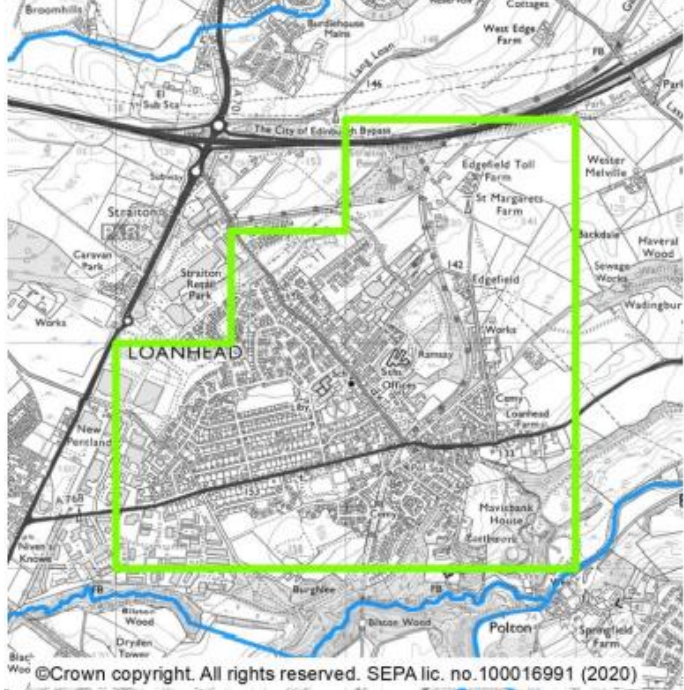
	<p>assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	Funding for this action is secured within Scottish Water's business plan.
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA.</p>

Action ID	Dalkeith 21903		
Action Type	Surface water management plan		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p>		
Funding	Midlothian Council		

Coordination	Action delivery lead is Midlothian Council in coordination with Scottish Water.
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## Local Flood Risk Management plan datasheet

Loanhead (target area 296)

Summary	Location Map
<p>Loanhead is a small town in the Midlothian Council area. The main source of flooding in Loanhead is from surface water. There are approximately 170 people and 100 homes and businesses currently at risk from flooding. This is likely to increase to 240 people and 140 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are some records of surface water flooding in this area.



## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2961	Avoid inappropriate development that increases flood risk in Loanhead
Prepare for flooding	2962	Prepare for current flood risk and future flooding as a result of climate change in Loanhead
Reduce flood risk	2963	Reduce the risk of surface water flooding in Loanhead

Action ID	Loanhead	29601	
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

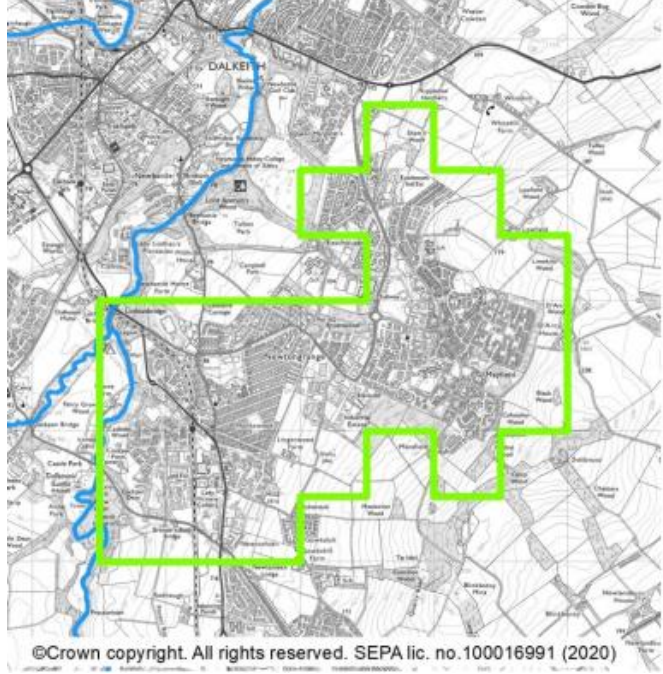
## Flood risk management plans: Forth Estuary Local Plan District (10)

	Outputs of this modelling assessment will be shared with local authorities and SEPA.
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Action ID	Loanhead	29602	
Action Type	Surface water management plan		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>Following the completion of the integrated catchment study, the local authority should prepare a strategic surface water management plan to determine high risk areas of surface water flooding across the Midlothian Council area. Current and long-term flood risk should be considered and include the assessment of the potential impacts of climate change.</p>		
Funding	Midlothian Council		
Coordination	Action delivery lead is Midlothian Council in coordination with Scottish Water.		

## Local Flood Risk Management plan datasheet

Newtongrange (target area 300)

Summary	Location Map
<p>The Newtongrange area also includes the community of Mayfield and is located south of Dalkeith within the Midlothian Council area. The main source of flooding in Newtongrange is surface water. There are approximately 720 people and 390 homes and businesses at risk from flooding. This is estimated to increase to 970 people and 510 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are no records of flooding in this area, but this does not confirm that there is no flood risk.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3001	Avoid inappropriate development that increases flood risk in Newtongrange
Prepare for flooding	3002	Prepare for current flood risk and future flooding as a result of climate change in Newtongrange
Reduce flood risk	3003	Reduce the risk of surface water flooding in Newtongrange

Action ID	Newtongrange 30001		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Outputs of this modelling assessment will be shared with local authorities and SEPA.
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Action ID	Newtongrange 30002		
Action Type	Surface water management plan		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>Following the completion of the integrated catchment study, the local authority should prepare a strategic surface water management plan to determine high risk areas of surface water flooding across the Midlothian Council area. Current and long-term flood risk should be considered and include the assessment of the potential impacts of climate change.</p>		
Funding	Midlothian Council		
Coordination	Action delivery lead is Midlothian Council in coordination with Scottish Water.		

## 02/10/25 (Penicuik)

This area is designated as a potentially vulnerable area due to flood risk to Penicuik. The main source of flooding is surface water, and there is also risk from river flooding from the Loan Burn. A number of floods have been recorded in this area, with several recent reports of flooding from the burn.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

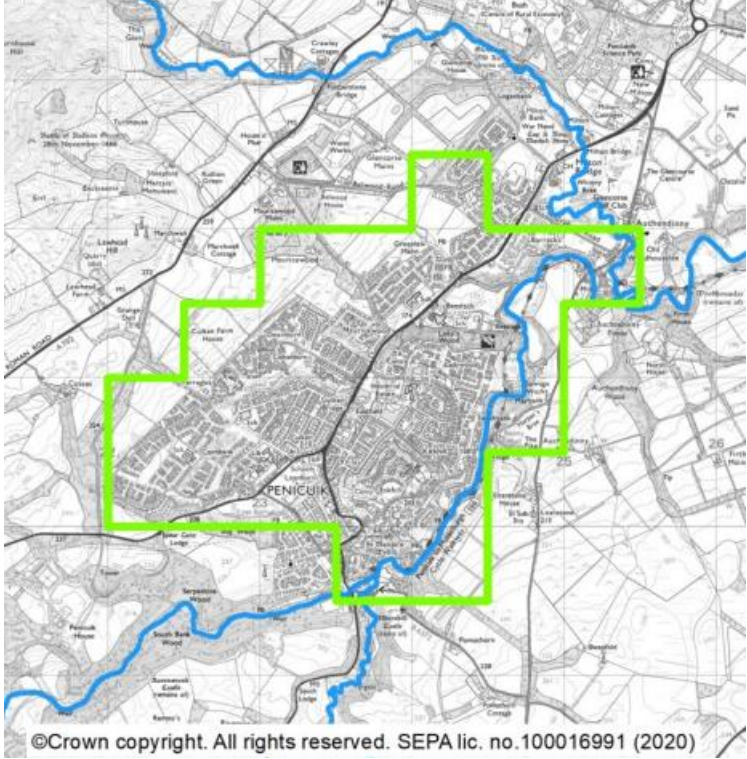
### List of target areas

Penicuik

(target area 307)

## Local Flood Risk Management plan datasheet

Penicuik (target area 307)

Summary	Location Map
<p>Penicuik is located south of Edinburgh on the west bank of the River North Esk. The town is within the Midlothian Council area. The main source of flooding in Penicuik is surface water and there is also a risk of river flooding although this is not considered significant. There are approximately 980 people and 520 homes and businesses currently at risk from flooding. This is likely to increase to 1,300 people and 660 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are records of flooding in this area. The most recent flood was recorded in October 2019 when river flooding inundated gardens and flats on the Edinburgh Road in Penicuik.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3071	Avoid inappropriate development that increases flood risk in Penicuik
Avoid flood risk	3072	Avoid an increase in flood risk by the appropriate management and maintenance of flood protection schemes and flood defences in Penicuik
Prepare for flooding	3073	Prepare for current flood risk and future flooding as a result of climate change in Penicuik
Reduce flood risk	3074	Reduce the risk of surface water flooding in Penicuik

Action ID	Penicuik 30701		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		



## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p> <p>Outputs of this modelling assessment will be shared with local authorities and SEPA.</p>
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Action ID	Penicuik 30702		
Action Type	Surface water management plan		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding on man-made surfaces or overwhelming the drainage system are to be identified. These priority areas will provide a baseline for the identification of next steps in managing water ponding or over-whelmed drainage systems. This should guide adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>Following the completion of the integrated catchment study, the local authority should prepare a strategic surface water management plan to determine high risk areas of surface water flooding across the Midlothian Council area. Current and long-term flood risk should be considered and include the assessment of the potential impacts of climate change.</p>		
Funding	Midlothian Council		
Coordination	Action delivery lead is Midlothian Council in coordination with Scottish Water.		

Action ID	Penicuik	30703
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## Flood risk management plans: Forth Estuary Local Plan District (10)

Action Type	Flood defence maintenance		
Action Delivery Lead	Midlothian Council	Indicative Delivery	Cycle 2
Description	<p>The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.</p> <p>Midlothian Council should continue to maintain existing flood protection scheme at Rullian Road.</p>		
Funding	Midlothian Council		
Coordination	Action delivery lead is Midlothian Council and coordination will be determined once the actions have been finalised.		

## 02/10/26 (North Berwick)

This area is designated as a potentially vulnerable area due to flood risk to North Berwick. The main source of flooding is coastal from the North Sea. Several floods have been recorded in this area.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

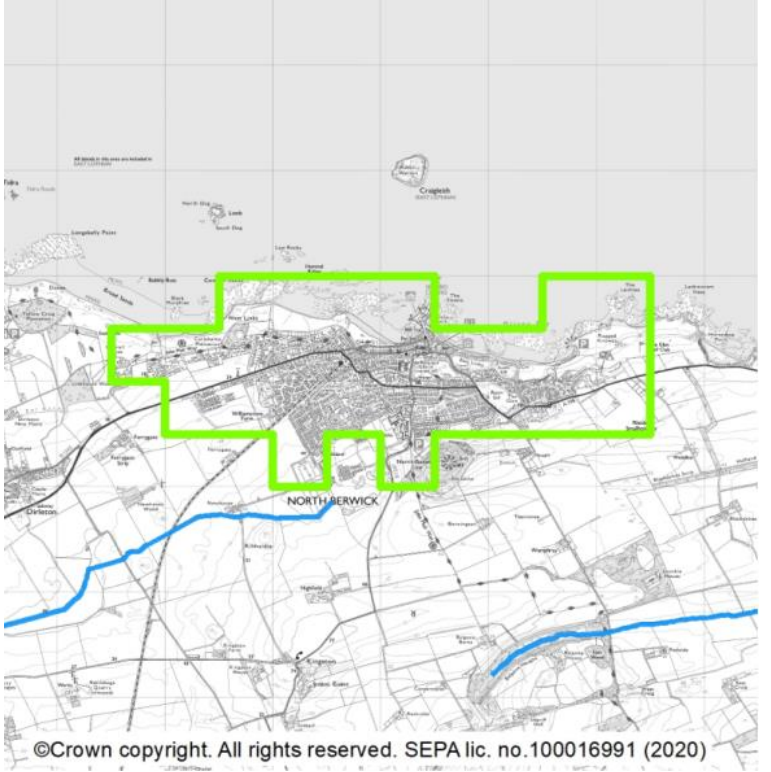
### List of target areas

North Berwick

(target area 305)

## Local Flood Risk Management plan datasheet

North Berwick (target area 305)

Summary	Location Map
<p>The town of North Berwick is situated on the southern shores of the Firth of Forth in East Lothian. The main source of flooding is coastal. There are approximately 150 people and 80 homes and businesses currently at risk from flooding. This is likely to increase to 200 people and 110 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources and this information has highlighted the risk of flooding in this target area. The national level assessment is the main source of flood risk information in this area. There is a long history of flooding in this area from the sea. A recent coastal flood was recorded in March 2018 when a storm caused high waves that overtopped the sea defences at North Berwick.

## Flood risk management plans: Forth Estuary Local Plan District (10)

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	3051	Avoid inappropriate development that increases flood risk in North Berwick
Prepare for flooding	3052	Prepare for current flood risk and future flooding as a result of climate change in North Berwick
Reduce flood risk	3053	Reduce the risk of coastal flooding in North Berwick

Action ID	North Berwick			30501
Action Type	Flood Study			
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2	
Description	<p>Flood study planned for Cycle 1 should continue to be carried out. The scoping study should include all areas of concern and include river, surface water and coastal flooding.</p> <p>This study should cover Dunbar, West Barns and North Berwick. This study should also assess the risk and mitigation of wave overtopping at North Berwick.</p> <p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p>			

## Flood risk management plans: Forth Estuary Local Plan District (10)

	The study may form part of any East Lothian Shoreline Management Plan update.
Funding	Progress dependant on funding arrangements. No capital funding currently allocated.
Coordination	East Lothian Council.  SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.

Action ID	North Berwick	30502
Action Type	Strategic Mapping Improvements	
Action Delivery Lead	SEPA	Indicative Delivery 2023-2026
Description	SEPA will continue to update flood maps based on new information. SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.	

Action ID	North Berwick	30503
Action Type	Flood Warning Maintenance	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood study. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.		

## 02/10/27 (Dunbar and West Barns)

This area is designated as a potentially vulnerable area due to flood risk to Dunbar and West Barns. The main sources of flood risk are coastal and surface water. There is also a risk of river flooding in West Barns from the Biel Water. There is a long history of flooding in this area, with recent coastal flooding to homes and surface water flooding.

There are 2 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

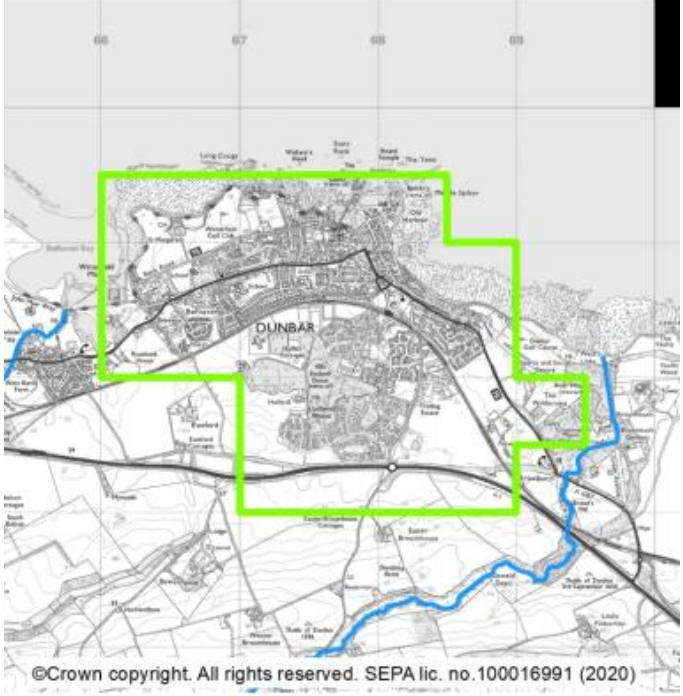
### List of target areas

Dunbar	(target area 222)
West Barns	(target area 322)



## Local Flood Risk Management plan datasheet

Dunbar (target area 222)

Summary	Location Map
<p>Dunbar is a town located on the east coast of Scotland within East Lothian. The main source of flooding in Dunbar is from surface water, however there is also risk from river and coastal flooding. There are approximately 340 people and 190 homes and businesses currently at risk. This is likely to increase to 580 people and 320 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for surface water flooding by a sewer flood risk assessment. There have been a number of floods recorded in the Dunbar area. The most recent flood was recorded in June 2017 when minor surface water flooding occurred to roads and the primary school grounds.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the

## Flood risk management plans: Forth Estuary Local Plan District (10)

future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	2221	Avoid inappropriate development that increases flood risk in Dunbar
Prepare for flooding	2222	Prepare for current flood risk and future flooding as a result of climate change in Dunbar
Reduce flood risk	2223	Reduce the risk of flooding from all sources in Dunbar

Action ID	Dunbar 22201		
Action Type	Flood study		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Flood study planned for Cycle 1 should continue to be carried out. The scoping study should include all areas of concern and include river, surface water and coastal flooding.</p> <p>This study should cover Dunbar, West Barns and North Berwick.</p> <p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p> <p>The study may form part of any East Lothian Shoreline Management Plan update.</p>		
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding allocated yet.</p>		
Coordination	East Lothian Council		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Dunbar 22202		
Action Type	Flood defence maintenance		
Action Delivery Lead	Asset owners / East Lothian Council	Indicative Delivery	Ongoing
Description	<p>The existing coastal defences in the area are privately owned. East Lothian Council does not maintain these defences but should continue to inspect them as required.</p>		
Funding	<p>Asset owners. East Lothian Council yearly capital and/or revenue budgets, as required.</p>		
Coordination	Asset owners / East Lothian Council.		

Action ID	Dunbar 22203		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle 2
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.
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Action ID	Dunbar	22204
Action Type	Strategic mapping improvements	
Action Delivery Lead	SEPA	Indicative Delivery 2023-2026
Description	<p>SEPA will continue to update flood maps based on new information.</p> <p>SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.</p>	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.	

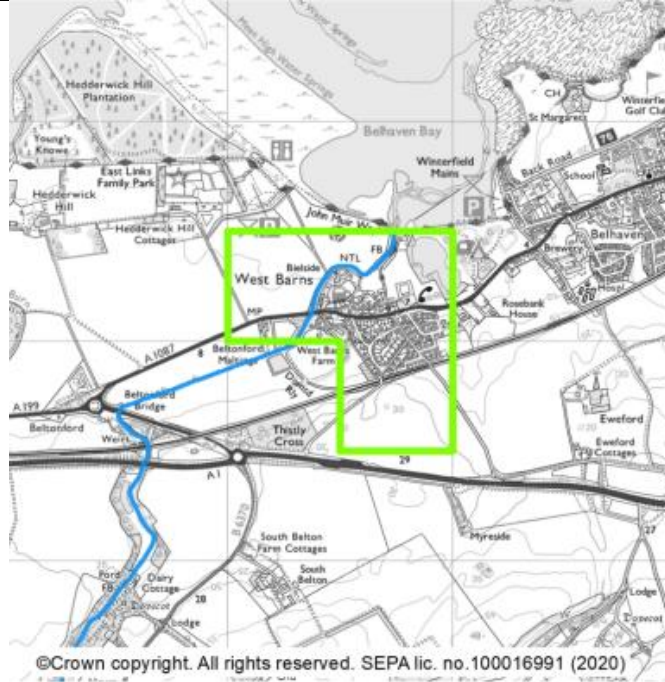
Local Flood Risk Management plan datasheet

West Barns (target area 322)

Summary

West Barns is a small village in East Lothian. The village is set back from Belhaven Bay and is relatively sheltered from the North Sea. The main sources of flooding in West Barns are river and coastal flooding. There are approximately 60 people and 40 homes and businesses currently at risk from flooding. This is likely to increase to 100 people and 60 homes and businesses by the 2080s due to climate change.

Location Map



What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is the main source of information in this area. A number of floods have been recorded in this area. In July 2007 the Biel Water overflowed causing flooding to 15 houses and a public bar.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any

## Flood risk management plans: Forth Estuary Local Plan District (10)

actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	3221	Avoid inappropriate development that increases flood risk in West Barns
Prepare for flooding	3222	Prepare for current flood risk and future flooding as a result of climate change in West Barns
Reduce flood risk	3223	Reduce the risk of coastal and river flooding from Biel Water in West Barns

Action ID	West Barns 32201		
Action Type	Flood study		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Flood study planned for Cycle 1 should continue to be carried out. The scoping study should include all areas of concern and include river, surface water and coastal flooding.</p> <p>This study should cover Dunbar, West Barns and North Berwick. This study should specifically cover the Biel Water.</p> <p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p> <p>The study may form part of any East Lothian Shoreline Management Plan update.</p>		
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding allocated yet.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	East Lothian Council
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Action ID	West Barns	32202
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.	

Action ID	West Barns	32203
Action Type	Strategic mapping improvements	
Action Delivery Lead	SEPA	Indicative Delivery 2023-2026
Description	<p>SEPA will continue to update flood maps based on new information.</p> <p>SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the</p>	

## Flood risk management plans: Forth Estuary Local Plan District (10)

	impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.



## 02/10/28 (Berwickshire Coast)

This area is designated as a potentially vulnerable area due to flood risk to Eyemouth. The main source of flood risk is the Eye Water and coastal flooding, sometimes in combination. There are a number of records of flooding in this area, with frequent coastal flooding in the harbour area.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

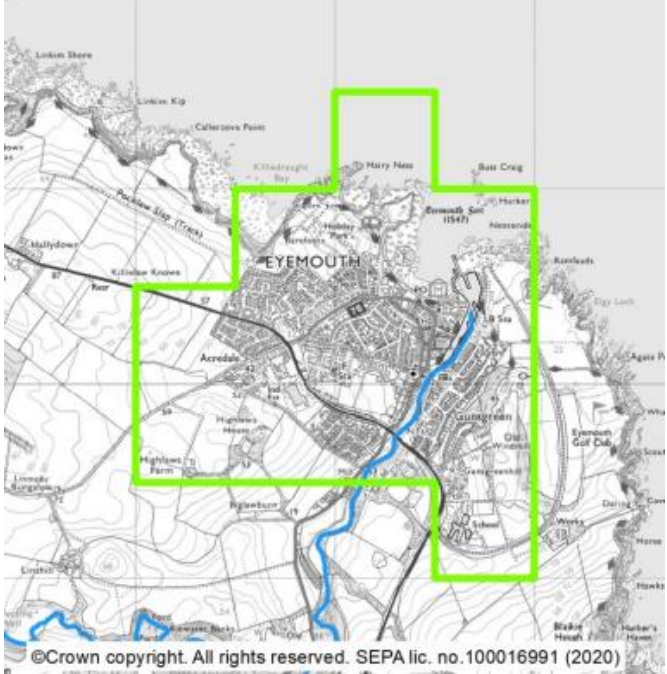
### List of target areas

Eyemouth

(target area 227)

## Local Flood Risk Management plan datasheet

Eyemouth (target area 227)

Summary	Location Map
<p>Eyemouth is a small coastal town located at the mouth of Eye Water in the Scottish Borders. The main source of flooding to Eyemouth is coastal flooding, and there is also a risk from river flooding. Surface water and sewer flood risk has also been recorded in Church Street. There are approximately 110 people and 90 homes and businesses at risk from flooding. This is estimated to increase to 150 people and 120 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for river flooding is improved by a flood study for Eyemouth. Understanding of coastal flooding is improved by the Berwickshire Coast Shoreline Management Plan and the understanding of surface water flooding is improved by a sewer flood risk assessment. There is a long history of flooding in this area. The big flood of 1948 caused significant river flooding that also coincided with a high spring tide and is thought to have been the most extreme flood in recent memory in the area. There was further

## Flood risk management plans: Forth Estuary Local Plan District (10)

flooding in the 1953 and 2013 due to storm surges. There is a recurring sewer flooding issue on Church Street which coincides with heavy rainfall which surcharges the combined sewer system. This is currently being managed through works by Scottish Water. Wave and spray overtopping occurs frequently in this area causing hazardous conditions. The local authority issues targeted warning messages using SBAAlert during adverse conditions as well as deploying demountable flood barriers on Harbour Road during times of flooding.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future. Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	2271	Avoid inappropriate development that increases flood risk in Eyemouth
Prepare for flooding	2272	Prepare for current flood risk and future flooding as a result of climate change in Eyemouth
Reduce flood risk	2273	Reduce the risk of river flooding from the Eye Water and coastal flooding in Eyemouth

Action ID	Eyemouth 22701		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Scottish Borders Council	Indicative Delivery	2022 - 2023
Description	In areas where flood risk is confirmed, a range of possible options to manage flood risk are to be identified, including natural flood management actions where suitable, and a preferred approach is		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	to be chosen. This should include adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.
Funding	Scottish Borders Council Revenue and Capital Budgets.
Coordination	<p>Scottish Borders Council will continue to develop the Coastal Flood Study through to completion, liaising with the community, Harbour Trust and other stakeholders as appropriate.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.</p>

Action ID	Eyemouth 22702		
Action Type	Shoreline management plan (coastal adaptive plan)		
Action Delivery Lead	Scottish Borders Council	Indicative Delivery	2022 - 2023
Description	An assessment of coastal flood and erosion risk is to be carried out. The plan should include assessment of climate change and develop adaptive approaches to allow for the impacts of climate change to be monitored, understood and managed.		
Funding	Scottish Borders Council Revenue and Capital Budgets.		
Coordination	<p>Scottish Borders Council will continue to develop the Berwickshire Coast Shoreline Management Plan, incorporating the Scottish SMP Guidance, liaising with the community, Harbour Trusts and other stakeholders as appropriate.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Eyemouth 22703		
Action Type	Community engagement		
Action Delivery Lead	Scottish Borders Council	Indicative Delivery	2022 - 2028
Description	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.		
Funding	Scottish Borders Council Revenue and Capital Budgets.		
Coordination	Scottish Borders Council will liase with the responsible authorities, community groups and other organistations to coordinate the delivery of this action and other associated actions.		

Action ID	Eyemouth 22704		
Action Type	Community resilience group		
Action Delivery Lead	Scottish Borders Council	Indicative Delivery	2022 - 2028
Description	The group of community volunteers work to prepare and put in practice their Community Resilience Plan and be supported by the local authority.		
Funding	Scottish Borders Council Revenue and Capital Budgets.		
Coordination	Eyemouth Response Team and Scottish Borders Council will continue to work together to deliver the resilience and community plans.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Eyemouth 22705		
Action Type	Emergency plan		
Action Delivery Lead	Scottish Borders Council	Indicative Delivery	2022 - 2028
Description	The plan to coordinate responses to emergency incidents between organisations, including local authorities, the emergency services and SEPA, is to be maintained and executed as required.		
Funding	This action is funded through multiple funding arrangements from a number of agencies.		
Coordination	Scottish Borders Council, the Emergency Services and SEPA initiate the relevant Emergency Plan as appropriate in relation to Met office weather warnings and SEPA flood warning information. This includes a coordinated approach with representation from all Category 1 and Category 2 responders including Scottish Water, voluntary groups and public utility companies through the relevant Joint Agency Control Centre.		

Action ID	Eyemouth 22706		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023 - 2026
Description	SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.
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Action ID	Eyemouth <span style="float: right;">22707</span>		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	2026-2028
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies and flood scheme development. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.		

Action ID	Eyemouth <span style="float: right;">22708</span>		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	2026-2028

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Eye Water flood warning scheme.</p>
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with Scottish Borders Council on the potential to use information from the flood study to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.

Action ID	Eyemouth <span style="float: right;">22709</span>		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	2026-2028
Description	SEPA should maintain the Eye Water flood warning scheme.		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will work with Scottish Borders Council on the potential to use information from the flood study to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.		



## 02/10/29 (Cockenzie, Port Seton, Longniddry and Prestonpans)

This area is designated as a potentially vulnerable area due to flood risk to Cockenzie and Port Seton, Longniddry, Macmerry, Prestonpans and Tranent from all sources. The main sources of flooding are coastal and surface water. There are several recent reports of surface water flooding to these communities, affecting homes and community services.

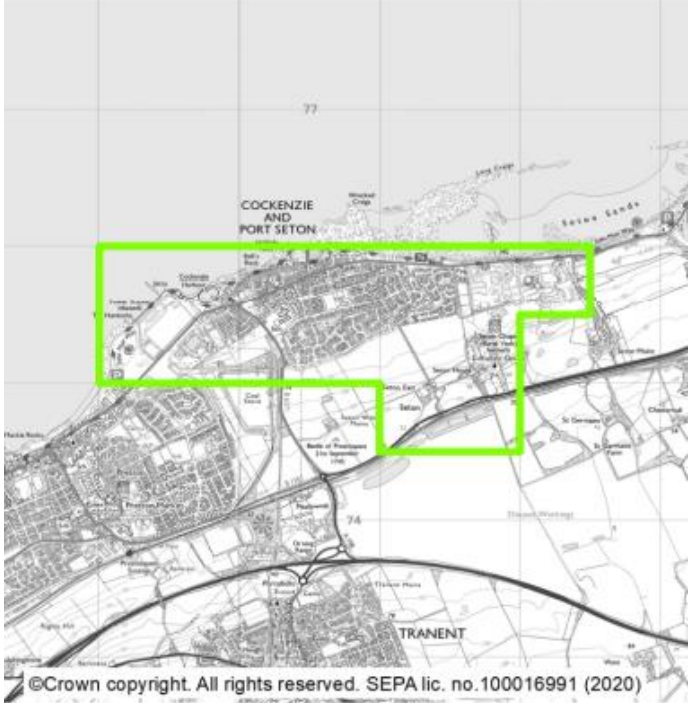
There are 5 target areas in this potentially vulnerable area, which have been the focus of further assessment, these are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

### List of target areas

Cockenzie and Port Seton	(target area 212)
Longniddry	(target area 297)
Prestonpans	(target area 309)
Tranent	(target area 319)
Macmerry	(target area 31900)

## Local Flood Risk Management plan datasheet

Cockenzie and Port Seton (target area 212)

Summary	Location Map
<p>Cockenzie and Port Seton are located on the southern side of the Firth of Forth in East Lothian. The main sources of flooding are coastal and surface water, however there is also a risk from river flooding. There are approximately 450 people and 230 homes and businesses currently at risk from flooding. This is likely to increase to 720 people and 360 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment is improved for surface water flooding by a sewer flood risk assessment. Two recent floods occurred, these coming in January 2016, when flooding from a blocked culvert affected a road and Seton Sands holiday park with damage to caravan pitches and August 2019 when surface water flooded a road and properties.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	2121	Avoid inappropriate development that increases flood risk in Cockenzie and Port Seton
Avoid flood risk	2122	Avoid an increase in flood risk by the appropriate management and maintenance of the coastal flood defences
Prepare for flooding	2123	Prepare for current flood risk and future flooding as a result of climate change in Cockenzie and Port Seton
Reduce flood risk	2124	Reduce the risk of surface water and coastal flooding in Cockenzie and Port Seton
Reduce flood risk	2125	Reduce the risk of river flooding from the Seton Dean and the culvert in Seton Sands

Action ID	Cockenzie and Port Seton 21201		
Action Type	Flood study		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Flood study planned for Cycle 1 should continue to be carried out.</p> <p>The flood study should incorporate river and coastal flooding for Cockenzie, Longniddry, Port Seton and Prestonpans, including river flooding from the Seton Dean and Seton Burn.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p> <p>The study may form part of any East Lothian Shoreline Management Plan update.</p>
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding currently allocated.</p> <p>Potential to undertake study in combination with Greater Blindwells development works.</p>
Coordination	<p>East Lothian Council and Scottish Water / Local Development Plan / Green Networks / Blindwells / ClimatEvolution Strategy.</p>

Action ID	Cockenzie and Port Seton 21202		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from manholes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	Funding for this action is secured within Scottish Water's business plan
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.

Action ID	Cockenzie and Port Seton	21203
Action Type	Flood defence maintenance	
Action Delivery Lead	Asset owners / East Lothian Council	Indicative Delivery Ongoing
Description	<p>The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.</p> <p>The existing coastal defences in the area are privately owned. East Lothian Council does not maintain these defences but should continue to inspect them as required.</p>	
Funding	<p>Asset owners.</p> <p>East Lothian Council yearly capital and/or revenue budgets as required</p>	
Coordination	Asset owners / East Lothian Council.	

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Cockenzie and Port Seton 21204		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	SEPA will maintain the Firth of Forth and Tay coastal flood warning service. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.		

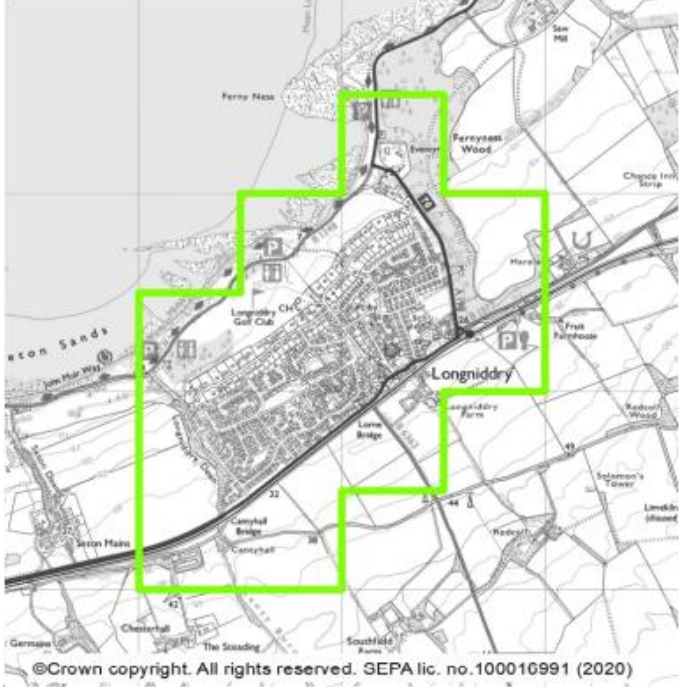
Action ID	Cockenzie and Port Seton 21205		
Action Type	Strategic mapping improvements		
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026
Description	<p>SEPA will continue to update flood maps based on new information.</p> <p>SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.

## Local Flood Risk Management plan datasheet

Longniddry (target area 297)

Summary	Location Map
<p>Longniddry is located on the southern shore of the Firth of Forth, in the East Lothian Council area. The main sources of flooding are river and surface water flooding, however there is also a risk from coastal flooding. There are approximately 200 people and 110 homes and businesses at risk from flooding. This is estimated to increase to 230 people and 120 properties by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. Coastal flooding is managed by the operation of flood defences along the B1348. There are limited records of flooding in this area with only one flood reported; the B6363 junction with the A198 flooded under the railway bridge following heavy rain in 2019.



## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2971	Avoid inappropriate development that increases flood risk in Longniddry
Avoid flood risk	2972	Avoid an increase in flood risk by the appropriate management and maintenance of the coastal flood defences along the B1348
Prepare for flooding	2973	Prepare for current flood risk and future flooding as a result of climate change in Longniddry
Reduce flood risk	2974	Reduce the risk of river flooding in Longniddry

Action ID	Longniddry 29701		
Action Type	Flood study		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Flood study planned for Cycle 1 should continue to be carried out.</p> <p>The flood study should incorporate river and coastal flooding for Cockenzie, Port Seton, Longniddry and Prestonpans. This study should consider the risk from the small burns in Longniddry.</p> <p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p> <p>The study may form part of any East Lothian Shoreline Management Plan update.</p>		
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding currently allocated.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	<p>Co-ordination and timing to be discussed between East Lothian Council and Scottish Water.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping.</p>
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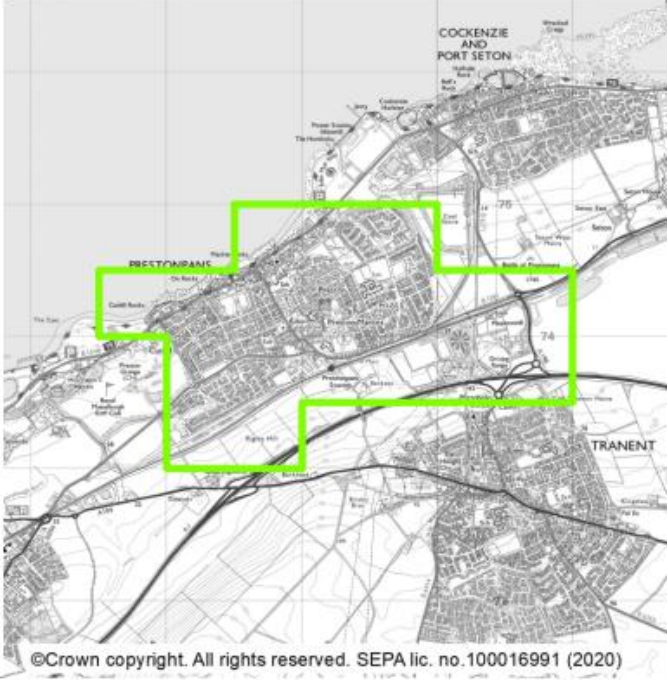
Action ID	Longniddry <span style="float: right;">29702</span>		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>		
Funding	Funding for this action is secured within Scottish Water's business plan.		
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Longniddry 29703		
Action Type	Flood defence maintenance		
Action Delivery Lead	Asset owners / East Lothian Council	Indicative Delivery	Ongoing
Description	<p>The existing coastal flood defences should continue to be inspected by East Lothian Council.</p> <p>Updates to ELC's existing maintenance regime should be made based on findings within the flood study.</p> <p>The management and performance of the existing defences should be included in the development of East Lothian's Climate Change Mitigation and Adaptation Strategy and Action Plan.</p>		
Funding	<p>Asset owners.</p> <p>East Lothian Council yearly capital and/or revenue budgets, as required.</p>		
Coordination	<p>Asset owners / East Lothian Council.</p> <p>Co-ordination will be determined once the actions required have been finalised.</p>		

## Local Flood Risk Management plan datasheet

Prestonpans (target area 309)

Summary	Location Map
<p>Prestonpans is a small town located on the south shore of the Firth of Forth, in the East Lothian Council area. The main source of flooding in Prestonpans is surface water, however there is also risk from coastal flooding. There are approximately 700 people and 350 homes and businesses currently at risk from flooding. This is likely to increase to 840 people and 420 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are some records of flooding in this area. In August 2011 flooding affected a children's respite centre causing damage to rooms and in December 2013, high tides and a storm surge caused flooding.

The Dynamic Coast project has shown that parts of the shoreline in or adjacent to this target area are subject to erosion at present or are considered likely to erode in the future.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Consideration should be given to how erosion might impact flood risk. Any actions taken should aim to support building natural resilience to flooding and not lead to an increase in erosion.

Objective	ID	Description
Avoid flood risk	3091	Avoid inappropriate development that increases flood risk in Prestonpans
Avoid flood risk	3092	Avoid an increase in flood risk by the appropriate management and maintenance of the coastal flood defences
Prepare for flooding	3093	Prepare for current flood risk and future flooding as a result of climate change in Prestonpans
Reduce flood risk	3094	Reduce the risk of coastal and surface water flooding in Prestonpans

Action ID	Prestonpans 30901		
Action Type	Flood study		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Flood study planned for Cycle 1 should continue to be carried out.</p> <p>The flood study should incorporate river and coastal flooding for Cockenzie, Port Seton, Longniddry and Prestonpans.</p> <p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p> <p>The study may form part of any East Lothian Shoreline Management Plan update.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding currently allocated.</p>
Coordination	<p>Co-ordination and timing to be discussed between East Lothian Council and Scottish Water.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with work on coastal flood mapping and flood warning actions.</p>

Action ID	Prestonpans	30902
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2023-2025
Description	<p>The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>	
Funding	Funding for this action is secured within Scottish Water's business plan.	
Coordination	Action delivery lead is Scottish Water in coordination with the local authority.	

Action ID	Prestonpans	30903
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## Flood risk management plans: Forth Estuary Local Plan District (10)

Action Type	Surface water management plan		
Action Delivery Lead	East Lothian Council in coordination with Scottish Water	Indicative Delivery	Cycle 2
Description	<p>Development of a surface water management plan for Prestonpans to better understand current and future surface water flood risk and mechanisms, and assess potential long term mitigation options to manage this risk.</p> <p>Results of the completed ICS and sewer flood risk assessments should be considered.</p> <p>Climate change impacts should be considered and if found to be significant, mitigation options should include adaptation planning, as required.</p>		
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding currently allocated.</p>		
Coordination	<p>Co-ordination and timing to be discussed between East Lothian Council and Scottish Water</p> <p>East Lothian Council considering delivering a SWMP focussed on individual areas.</p>		

Action ID	Prestonpans	30904	
Action Type	Flood defence maintenance		
Action Delivery Lead	East Lothian Council / Asset owners	Indicative Delivery	Ongoing

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>The existing coastal flood defences should continue to be maintained by East Lothian Council where required.</p> <p>Updates to ELC's existing maintenance regime should be made based on findings within the flood study.</p> <p>The management and performance of the existing defences should be included in the development of East Lothian's Climate Change Mitigation and Adaptation Strategy and Action Plan.</p>
Funding	Asset owners / East Lothian Council yearly capital and/or revenue budgets
Coordination	East Lothian Council / Asset owners

Action ID	Prestonpans 30905		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Second half of cycle
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the Firth of Forth and Tay coastal flood warning scheme. The scheme should be investigated for improvement and/or recalibration.</p>		
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding allocated yet.</p>		
Coordination	<p>SEPA will work with the local authorities on the potential to coordinate flood warning improvements with the flood studies. SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.</p>		

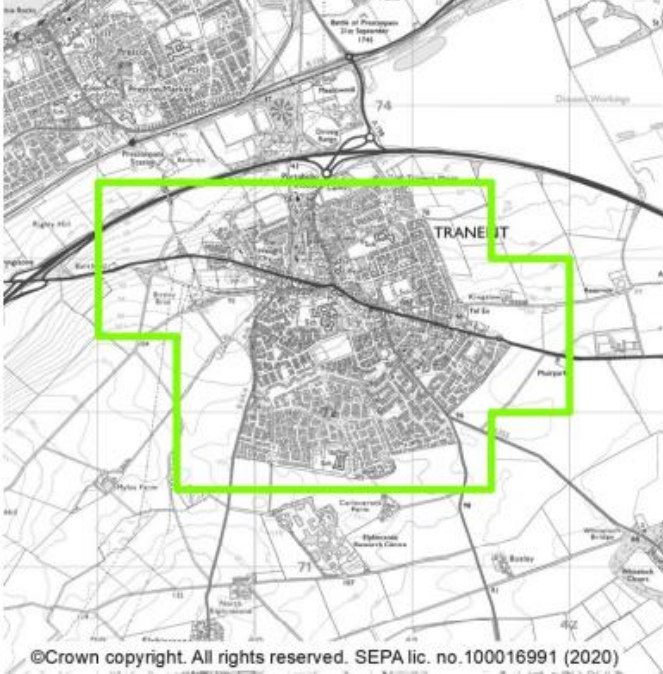


## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Prestonpans			30906
Action Type	Strategic mapping improvements			
Action Delivery Lead	SEPA	Indicative Delivery	2023-2026	
Description	<p>SEPA will continue to update flood maps based on new information.</p> <p>SEPA will be undertaking a review of coastal flood modelling in this target area to identify where it may be appropriate to include the impact of waves on coastal flooding. We will progress with improved flood modelling and mapping in the highest priority areas taking account of availability of data to support the modelling work.</p>			
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.			
Coordination	SEPA will work with the local authority on the potential to coordinate the flood map update with any other actions being carried out to understand or reduce coastal flooding.			

## Local Flood Risk Management plan datasheet

Tranent (target area 319)

Summary	Location Map
<p>Tranent is a town located 14km east of Edinburgh, within the East Lothian Council area. The main source of flooding in Tranent is surface water, however there is also a risk from river flooding. There are approximately 500 people and 260 homes and businesses currently at risk from flooding. This is estimated to increase to 590 people and 310 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by an integrated catchment study and a sewer flood risk assessment. There are several records of flooding in this area. In August 2011 flooding caused damage to a local school. A flood was also recorded in May 2014, when surface water flooding inundated a shop.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	3191	Avoid inappropriate development that increases flood risk in Tranent
Prepare for flooding	3192	Prepare for current flood risk and future flooding as a result of climate change in Tranent
Reduce flood risk	3193	Reduce the risk of surface water flooding in Tranent
Reduce flood risk	3194	Reduce the risk of river flooding from the Harry's Burn in Tranent

Action ID	Tranent 31901		
Action Type	Flood study		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Flood study planned for Cycle 1 should continue to be carried out.</p> <p>The flood study should incorporate river and surface water flooding for Tranent and Macmerry.</p> <p>This study should align with and/or consider the completed ICS and any flood studies, surface water management plans, ICS updates or Sewer Flood Risk Assessments covering Tranent.</p> <p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p>		
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding currently allocated.</p>		
Coordination	Co-ordination and timing to be discussed between East Lothian Council and Scottish Water.		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Tranent 31902		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Scottish Water and East Lothian Council	Indicative Delivery	2022-2028
Description	<p>In areas where flood risk is confirmed, a range of possible options to manage flood risk are to be identified, including natural flood management actions where suitable, and a preferred approach is to be chosen. This should include adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A joint project to refine the options identified in the integrated catchment optioneering study will be taken forward in Cycle 2 subject to funding allocation and agreement with Scottish Water.</p>		
Funding	Funding to take the study forward to the next stage is yet to be confirmed.		
Coordination	Action delivery leads are Scottish Water and East Lothian Council and coordination will be determined once the actions have been finalised.		

Action ID	Tranent 31903		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be		

Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>assessed, to support understanding of the performance of the urban drainage network.</p> <p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	Funding for this action is secured within Scottish Water's business plan.
Coordination	Action delivery lead is Scottish Water in coordination with East Lothian Council.


Action ID	Tranent 31904		
Action Type	Surface water management plan		
Action Delivery Lead	East Lothian Council in coordination with Scottish Water	Indicative Delivery	Cycle 2
Description	<p>Development of a surface water management plan for Tranent to better understand current and future surface water flood risk and mechanisms, and assess potential long term mitigation option to manage this risk.</p> <p>This study should align with and/or consider the completed ICS and any flood studies, ICS updates or sewer flood risk assessments covering Tranent.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

	Climate change impacts should be considered and if found to be significant, mitigation options should include adaptation planning, as required.
Funding	No capital funding currently allocated.  Cycle 1 action but due to follow the completion of the ICS / Sewer FRA.
Coordination	Scottish Water priority area / East Lothian Council.  East Lothian Council considering delivering a SWMP focussed on individual areas.

## Local Flood Risk Management plan datasheet

Macmerry (target area 31900)

Summary	Location Map
<p>The village of Macmerry is located east of Tranent within the East Lothian Council area. The main source of flooding in Macmerry is surface water. There are approximately 80 people and 40 homes and businesses currently at risk from flooding. This is likely to increase to 90 people and 50 homes and businesses by the 2080s, due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources and this information has highlighted the risk of flooding in this target area. The national level assessment is the main source of flood risk information in this area. A number of floods have been recorded in this area. The first flood recorded in the area occurred in February 2011, when fields and footpaths were inundated with floodwaters. A notable flood occurred in June 2012, when three houses in Macmerry were damaged by surface water flooding.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	319001	Avoid inappropriate development that increases flood risk in Macmerry.
Prepare for flooding	319002	Prepare for current flood risk and future flooding as a result of climate change in Macmerry.
Reduce flood risk	319003	Reduce the risk of surface water flooding in Macmerry.

Action ID	Macmerry 3190001		
Action Type	Flood study		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Flood study covering Macmerry should be carried out.</p> <p>The flood study should incorporate river and surface water flooding for Tranent and Macmerry.</p> <p>This study should align with the completed ICS and any flood studies, ICS updates or Sewer Flood Risk Assessments.</p> <p>Current and long term flood risk, potential impacts of climate change and proposed mitigation options should be considered and assessed as part of the study.</p>		
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding currently allocated.</p>		
Coordination	Co-ordination and timing to be discussed between East Lothian Council and Scottish Water.		



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Macmerry 3190002		
Action Type	Flood study (options appraisal)		
Action Delivery Lead	Scottish Water and East Lothian Council	Indicative Delivery	2022-2028
Description	<p>In areas where flood risk is confirmed, a range of possible options to manage flood risk are to be identified, including natural flood management actions where suitable, and a preferred approach is to be chosen. This should include adaptive planning to allow for the impacts of climate change to be monitored, understood and managed.</p> <p>A joint project to refine the options identified in the integrated catchment optioneering study will be taken forward in cycle 2 subject to funding allocation and agreement with Scottish Water.</p>		
Funding	Funding to take the study forward to the next stage is yet to be confirmed.		
Coordination	It is recommended for Scottish Water and East Lothian Council to confirm the priority of taking forwards any further study.		

Action ID	Macmerry 3190003		
Action Type	Sewer flood risk assessment		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-2025
Description	The volume of water that would overwhelm the sewer system and cause flooding from man-holes or inside our homes is to be assessed, to support understanding of the performance of the urban drainage network.		

Flood risk management plans: Forth Estuary Local Plan District (10)

	<p>Scottish Water will carry out an assessment of sewer flood risk within the highest priority sewer catchments, which includes the Edinburgh sewer catchment in this target area. This will help to improve knowledge and understanding of potential surface water flood risk. Funding for this action is secured through Scottish Water's strategic planning commitments.</p>
Funding	<p>Funding for this action is secured within Scottish Water's business plan.</p>
Coordination	<p>Action delivery lead is Scottish Water in coordination with the local authority.</p>

Action ID	Macmerry 3190004		
Action Type	Surface water management plan		
Action Delivery Lead	East Lothian Council in coordination with Scottish Water	Indicative Delivery	Cycle 2
Description	<p>Development of a surface water management plan for Macmerry to better understand current and future surface water flood risk and mechanisms, and assess potential long term mitigation options to manage this risk.</p> <p>This study should align with and/or consider the completed ICS and any flood studies, ICS updates or sewer flood risk assessments covering Macmerry.</p> <p>Climate change impacts should be considered and if found to be significant, mitigation options should include adaptation planning, as required.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Funding	No capital funding currently allocated.  Cycle 1 action but due to follow the completion of the ICS / further Flood Study.
Coordination	Scottish Water priority area / East Lothian Council.  East Lothian Council considering delivering a SWMP focussed on individual areas.

## 02/10/30 (Haddington)

This area is designated as a potentially vulnerable area due to flood risk to Haddington. The main source of flooding is the River Tyne and there is also risk from surface water. There is a long history of flooding in this area, with recent river flooding from the River Tyne and surface water.

There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

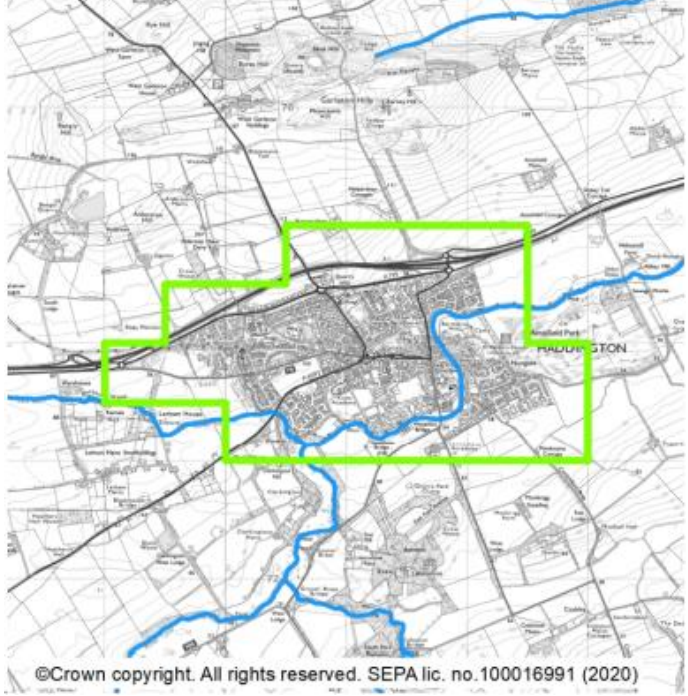
### List of target areas

Haddington

(target area 233)

## Local Flood Risk Management plan datasheet

Haddington (target area 233)

Summary	Location Map
<p>The town of Haddington is situated on the banks of the River Tyne in the East Lothian Council area. The main source of flooding in Haddington is from the River Tyne, however there is also a risk from surface water. There are approximately 1,300 people and 800 homes and businesses currently at risk from flooding. This is likely to increase to 2,000 people and 1,200 homes and businesses by the 2080s due to climate change.</p>	

## What is the Current understanding of Flood risk

This section provides a summary of information, which has helped to develop an understanding of flood risk in the area. Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources. The national level assessment for surface water flooding is improved by a sewer flood risk assessment. There is a long history of flooding in this area with frequent flooding from the River Tyne. A notable flood occurred in September 2009 when the River Tyne burst its banks, flooding local roads, schools, businesses, a pub and 1 residential property. Flooding of streets and roads occurred when the river burst its banks in July 2012.

## Flood risk management plans: Forth Estuary Local Plan District (10)

Objective	ID	Description
Avoid flood risk	2331	Avoid inappropriate development that increases flood risk in Haddington
Avoid flood risk	2332	Avoid an increase in flood risk by the appropriate management and maintenance of the Haddington flood protection scheme
Prepare for flooding	2333	Prepare for current flood risk and future flooding as a result of climate change in Haddington
Reduce flood risk	2334	Reduce the risk of river flooding from the River Tyne in Haddington
Reduce flood risk	2335	Reduce the risk of surface water flooding in Haddington

Action ID	Haddington 23301		
Action Type	Flood scheme or works design		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Haddington Flood Protection Scheme was allocated funding as a prioritised flood protection scheme in Cycle 1.</p> <p>The development of a flood protection scheme in Haddington should continue. Current and long term flood risk should be further considered and the scheme should continue to Outline Design Phase.</p> <p>Natural flood management and climate change should be considered within the design phases.</p>		
Funding	<p>Scottish Government / East Lothian Council.</p> <p>Progress dependent on funding arrangements.</p>		

## Flood risk management plans: Forth Estuary Local Plan District (10)

Coordination	East Lothian Council / Scottish Government / SEPA / Scottish Water.  SEPA will work with the local authority on the potential to coordinate this action with flood warning actions.
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Action ID	Haddington 23302		
Action Type	Flood scheme or works implementation		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2
Description	<p>Haddington Flood Protection Scheme was allocated funding as a prioritised flood protection scheme in Cycle 1.</p> <p>The development of a flood protection scheme in Haddington should continue. Current and long term flood risk should be further considered and the scheme should continue to Outline Design Phase.</p> <p>Dependent on funding arrangements, the scheme should progress to construction once detailed design is complete.</p>		
Funding	<p>Scottish Government / East Lothian Council.</p> <p>Progress dependent on funding arrangements.</p>		
Coordination	<p>East Lothian Council / Scottish Government / SEPA / Scottish Water</p> <p>SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD and flood warning actions.</p>		

Action ID	Haddington 23303		
Action Type	Surface water management plan		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Cycle 2

## Flood risk management plans: Forth Estuary Local Plan District (10)

Description	<p>Development of a surface water management plan for Haddington to better understand current and future surface water flood risk and mechanisms, and assess potential long term mitigation options to manage this risk.</p> <p>The results of completed integrated catchment study/sewer flood risk assessments should be considered.</p> <p>Climate change impacts should be considered and if found to be significant, mitigation options should include adaptation planning, as required.</p>
Funding	<p>Progress dependent on funding arrangements.</p> <p>No capital funding currently allocated.</p> <p>East Lothian Council considering delivering a SWMP focussed on individual areas.</p>
Coordination	<p>Co-ordination and timing to be discussed between East Lothian Council and Scottish Water.</p>

Action ID	Haddington 23304		
Action Type	Community engagement		
Action Delivery Lead	East Lothian Council	Indicative Delivery	Ongoing
Description	Detailed community engagement should take place based on the outcomes of the development of the Haddington Flood Protection Scheme and surface water management plan.		
Funding	East Lothian Council		
Coordination	East Lothian Council / Scottish Water		



## Flood risk management plans: Forth Estuary Local Plan District (10)

Action ID	Haddington 23305		
Action Type	Flood warning maintenance		
Action Delivery Lead	SEPA	Indicative Delivery	Ongoing
Description	<p>The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.</p> <p>SEPA should maintain the River Tyne flood warning scheme.</p>		
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.		
Coordination	<p>SEPA will continue to maintain the River Tyne flood warning scheme.</p> <p>SEPA will continue to raise awareness of flood warning and engage with communities about the service when required.</p>		

## Section 3: Next Steps

### 3.1 Next Steps and Monitoring Progress

This Plan will run for six years from 2022. Over this period the Forth Estuary partnership will meet from time to time to monitor progress on implementing the actions detailed in Section two of the Plan. Each partner organisation will receive reports through its governance processes and actions arising will be considered by the Steering Group.

Between years two and three of the cycle (i.e. before December 2025), the lead local authority for the Forth Estuary will publish a report on the conclusions of a review of the Plan, including information on the progress that has been made towards delivering the actions identified in the Plan.

Between years five and six of the cycle (i.e. before June 2028) the lead local authority for the Forth Estuary will publish a report on the Plan containing an assessment of the progress made towards delivering the “current actions”, a summary of the actions not implemented, with reasons why, and a description of any other actions undertaken since the plan was finalised, which the lead local authority considers have contributed to the achievement of the objectives in the Plan.

Falkirk Council will make this report available for public inspection.

## 4.0 Annexes

### 4.1 Acknowledgements

The information described in this Annex relates to the Figures and Maps that have been generated by SEPA and have been reproduced in this Local Flood Risk

Management Plan from the Forth Estuary Flood Risk Management Strategy. The Forth Estuary Local Plan District Partners gratefully acknowledges the cooperation and input that various parties have provided, including inter alia, the following organisations:

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### **Local authorities**

Lead authorities acknowledge the provision of flood models and other supporting data and information from local authorities in Scotland and their collaboration in the production of flood risk management information.

### **Scottish Water**

Local authorities acknowledge the inclusion of surface water flooding data generated by Scottish Water in preparation of flood risk information.

### **The Flood Hazard Research Centre**

Multi-coloured Manual and Multi-coloured Handbook 2016.

All contributors to the **2018 NFRA**, more information on which can be found at <https://www.sepa.org.uk/data-visualisation/nfra2018/>