

# Forth Local Flood Risk Management Plan Cycle 2

2022-2028



**Final Report**

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## 1. Flood Risk Management in Forth Local Plan District

### 1.1 What is a flood risk management plan?

The Forth Local Flood Risk Management Plan (the Plan) sets out how and when actions to reduce the impact of flooding within the Forth Local Plan District (LPD) as identified in the overall Flood Risk Management Plan (FRM Plan) will be delivered. The FRM Plan identifies where the risk of flooding and benefit of investment is greatest and the Plan articulates how and when prioritised actions will be delivered. Plans will be delivered over six-year cycles starting with the first cycle running from 2016 to 2022 and cycle two from 2022- 2028. The content of the Plan has been agreed by Stirling Council, as the lead local authority, along with every other responsible authority that has flood risk related functions exercisable in or in relation to the Forth LPD, and SEPA.

[Flood risk management plans](#) have been designed to ensure effort to reduce flood risk in Scotland is coordinated.

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

The Plan is published by Stirling Council in agreement with:

- Falkirk Council;
- Perth and Kinross Council;
- Clackmannanshire Council;
- Fife Council;
- Scottish Water;
- SEPA;
- Scottish Forestry and
- Loch Lomond and Trossachs National Park Authority

This plan replaces the first (cycle 1) Forth flood risk management plans, which were published in 2016. The updated Plan continues to build on the risk-based, plan-led approach established in the 2015 strategies.

The flood risk management plans are required under the Flood Risk Management (Scotland) Act 2009 and will be updated every 6 years. Many organisations are responsible for flood risk management and the plans focus 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 this plan.



## 1.2 Managing flooding in Scotland

Flooding needs to be managed sustainably so that flood risk is reduced without displacing the problem elsewhere. It must be managed 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 national approach. Using all the latest information to regularly review our assessment of flood risk forms the foundation of a risk-based, plan-led approach to managing flooding sustainably. Stirling Council has outlined the key stages of the flood risk management process below.

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

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

The objectives for each area were agreed by Stirling Council, Falkirk Council, Clackmannanshire Council, Perth and Kinross Council, and Fife Council. Then actions were developed to deliver these objectives. Actions to deliver the “Reduce” objectives included developing flood studies and flood protection schemes, and providing public flood warnings and alerts. Actions for the “Avoid” objective included maintenance of flood defences and storage areas, and producing strong planning policies which prevent development from taking place in flood risk areas.

Mid-cycle reports were published by Stirling Council in 2019. Giving the status of each action at that time was assessed, and reported 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.

In December 2022, a final report (S38) Forth Local Flood Risk Management Plan was also published by Stirling Council, thus accomplishing the statutory requirements as set out in the FRM 2009 Act. The report reflects upon the progress of the actions from cycle 1 and uses the same RAG system as above to report on each action and its status at the end of cycle 1.

Actions with a green or amber status can be expected to succeed in working towards their objectives.

## **1.3 How the flood risk management plans were developed**

### **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 requires coordination, which are 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.

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. Stirling Council, Falkirk Council, Clackmannanshire Council, Perth and Kinross Council, Fife Council, Scottish Water, Scottish Flood Forum, Scottish Forestry, Loch Lomond and Trossachs National Park, other responsible authorities, and members of the local advisory groups have made significant contributions to the Forth local Plan.

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 the responsible local 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.

#### **a) 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 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)

Other useful tools and advice on how to be prepared are available on the Floodline website.

#### **b) SEPA**

SEPA is Scotland's national flood forecasting, flood warning and strategic flood risk management authority. SEPA work in partnership with the Met Office to forecast flooding and operate Floodline to warn the public and emergency responders when flooding is likely. SEPA produce 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 provide flood risk advice on land use planning when requested and raise awareness of flooding at a national level through education initiatives, community engagement and campaigns.

#### **c) Local authorities and lead local authorities**

Stirling council is lead local authority for this Plan. Stirling Council along with Falkirk Council, Clackmannanshire Council, Fife Council and Perth and Kinross Council are responsible for working together to produce the Plan and work in partnership with SEPA, Scottish Water and other responsible authorities to develop this.

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

#### **d) 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 a duty for public drainage 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 occurrences of sewer flooding during frequent rainfall events.

**e) 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 FRM Plan 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.

Loch Lomond & Trossachs National Park is a partner within this Plan.

**f) 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 Ministers have also approved the FRM Plan-

**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 (SFF)** works to reduce the impacts of flooding by providing immediate support and advice to those either at risk of, or directly affected by flooding. The SFF work to establish a network of community resilience groups in flood risk areas. This

equips communities to plan, prepare, respond and recover from flooding by building better flood resilience.

### **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 during the development of the Local flood risk management plans. They are held jointly with SEPA, to better understand how flooding occurs in these priority areas and to develop objectives and actions to manage flooding (2021).

The second, most recent consultation ran from December 2020 to October 2021 in two parts. From December 2020, information on the Local Plan Districts, the Potentially Vulnerable Areas (PVAs) and the communities identified as “Target Areas” was made available. Further information on the objectives and actions planned for each Target Area was added in July 2021. The consultation was advertised widely by both SEPA and the five local authorities within the Forth LDP. Thirty-four responses were received, and these contributions have helped shape the content of this plan. A summary of the consultation is detailed in section 1.3.5

### **1.3.4 Strategic Environmental Assessment and Habitat Regulations Appraisal**

#### **Strategic Environmental Assessment (SEA)**

The public consultation on the draft flood risk management plans 2021-2027 was supported by an Environmental Report (July 2021). This set out the findings of a Strategic Environmental Assessment (SEA) of the likely environmental effects of the potential effects of the types of actions identified for each of the 14 flood risk management plans across Scotland. Appendix M of the report presents the specific aspects of the (SEA) relevant to the Forth Local Plan District (LPD).

There are no new actions within the Forth Local FRMP that have not already been identified or appraised in the Environmental Report for the FRMP 2021-2027. The only additional information in the LFRMP relates to the timing of proposed measures and how they are to be funded. On this basis, it is concluded the LRFMP, in its own right, is unlikely to have significant environmental effect therefore a formal SEA is not required. A screening report has been submitted to the SEA Gateway to this effect.

#### **Habitats Regulations Appraisal (HRA)**

The draft flood risk management plans 2021-2027 fall within the scope of the Habitats Directive as they will influence decision makers on the outcome of applications for project

consents, and will contain actions that could affect one or more particular European sites, i.e. Special Protection Areas (SPAs) classified under the Birds Directive and Special Areas of Conservation (SACs); designated under the EC Habitats Directive 1992. SEPA, therefore, undertook a Habitats Regulations Appraisal for the FRM Plans.

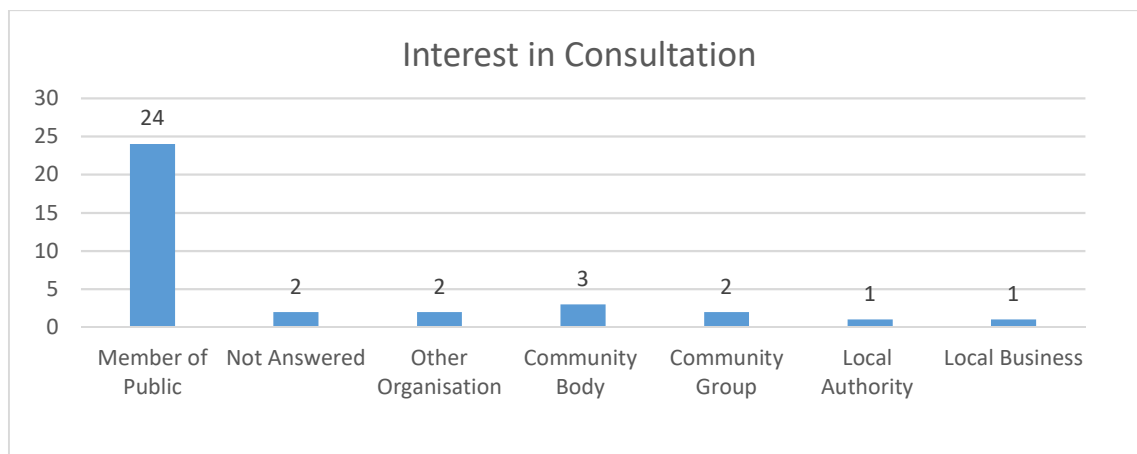
The different action types were screened to identify those that would clearly not have any likely significant effect -collection and monitoring, planning and resilience, and new flood studies. Cycle 1 Flood Protection Schemes were also screened out as they were assessed in the last cycle, as were Cycle 3 Flood Protection Schemes as these will be better assessed next cycle when further information is available. Remaining actions were then assessed for connectivity with European sites. In summary, Cycle 2 Flood Protection Schemes at design stage with connectivity with European sites were screened into the assessment.

Within the Forth Flood Risk Management Plan area, only one action was identified as likely to have significant effects - the Flood Protection Scheme at Aberfoyle. In line with advice from Nature Scot, a mitigation statement had been added to the Forth FRM Plans to be carried through to future stages of planning. It is confirmed the statement has now been included in this LFRMP.

Following from the above, it has been concluded that the LRFMP, in its own right, is unlikely to have significant effects on European sites and therefore does not require a separate HRA. Nature Scot have confirmed the validity of this approach.

### 1.3.5 Consultation Report

A joint consultation was undertaken for both the FRM Plan and the Forth Local Plan between 31 July and 31 October 2021. A total of 34 replies were received for the Forth LPD area. The response received were split across the following representatives, with the majority (73.53%) submitted from members of the public:-



**Figure 1: Responses Interest in Consultation**

## Summary of Consultation Results

- The majority of responses (52.94%) agreed “yes” that the main communities and infrastructure that required flood risk management objectives and actions within the Forth Local Plan District had been identified.
- Greatest interest in responses received was in the target area Stirling (OTA 258) receiving the greatest response at (41.93%).
- The majority (38.24%) were unsure on if they agreed with the proposed package of objectives for their target area of interest. The majority (44.32%) were also unsure on the proposed time frames. The majority (47.06%) were unsure of ways that they or their community could support and contribute to any of the actions set out in the draft FRMP to reduce flood risk. ***Stirling Council aims to provide more stakeholder engagement to help support and improve understanding on the projects.***
- There was a range of suggestions and concerns, including flash flooding. As part of this Plan **Stirling Council will continue to ensure planning applications will be determined in line with current guidelines and policies. As well as continuing with surface water management plans and studies to better understand flooding and potential mitigation solutions.**

## 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 and 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.

Stirling Council develops and adopts a new Local Development Plan every five years. It sets out the Council’s strategy for delivering appropriate development in Stirling, considering a number of potential constraints, including flooding. The current plan was adopted in 2018. Once approved, any policies from the Fourth National Planning Framework (NPF4) will also be incorporated. The next planned publication date-for LDP is currently estimated for 2026.

Loch Lomond & the Trossachs National Park Authority will prepare a new Local Development Plan informed by the new requirements set out by National Planning Framework 4 (NPF4) when it is approved. The new Local Development Plan (LDP) will ensure that the NPF4 requirements regarding flood risk management are incorporated into the next LDP updated policies and allocations for development.

The current National Park timescale for a new LDP is 2024 at earliest.

Periodically, Falkirk Council will review and update its Local Development Plans. These plans set out the strategy for delivering appropriate development within each area and take into account a number of constraints, including flooding. The current Local Development Plan was adopted in 2017.

Clackmannanshire Council will prepare a new Local Development Plan under National Planning Framework 4 when it is approved. It is anticipated that this will be later in 2023. This will address the updated flooding and drainage policies contained in NPF4 and incorporate other updated policies and guidance. Statutory Supplementary Guidance will no longer form part of the Development Plan, however the requirement and scope for non-statutory guidance will be considered as part of the LDP process.

The current Perth & Kinross Local Development Plan (LDP2) was adopted in November 2019. The Council has started a review of LDP2 (which) to produce LDP3 involving data gathering and settlement audit work. Key milestones in the LDP3 review will be the policy and place discussions which will take place during 2023/24, culminating in the preparation of an Evidence Report in 2024, whilst preparation of the Proposed Plan is programmed for 2024/25.

Fife Council are in the process of development of a second Local Development Plan (LDP2). The new Local Development Plan (LDP) will ensure that the NPF4 requirements regarding flood risk management are incorporated into the next LDP updated policies and allocations for development.

SEPA is a statutory consultee providing flood risk advice on planning applications. Flood risk management teams within all the local authorities within the Plan provide advice to the planning authorities that informs the local development plans and planning decisions.

### **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. Stirling 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 planning aims to ensure that there is strong coordination between the management of sewer flooding and wider surface water flood risk, and the actions to be taken forward by local authorities and others.

#### **1.4.5 Duty to assess bodies of water and schedule clearance and repair works**

The duty to assess bodies of water and schedule clearance and repair works lies with the five local authorities within the Forth FRM plan.



**Figure 2- Example of a grille**



**Figure 3- Example of a watercourse**

Stirling Council 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. The frequency of inspection is dependent on the assessed risk. Any works identified during these inspections are included in the Council’s schedule of clearance and repair.

Stirling Council will continue to inspect watercourses to identify flood risks and to carry out the regular inspection and clearance regime of identified sensitive assets and have installed a number of new assets onto its clearance and repair register. This has resulted in a reduction in localised and repeat flooding incidents. Budgets have, however, been reduced therefore the volume of clearance and repair works has reduced. Maintenance will continue to be carried out on a risk-based approach and cyclical maintenance scheduled on assets on intervals based on risk posed/known sites of interest or known issues. There are currently 100 assets on our clearance contract which includes a visual inspection of the asset, checking



that water can flow either freely through or out of the asset, and removing any debris obstructing the flow of water when required. An emergency list of assets has also been determined, which allows for additional inspections in the result of any severe weather forecasting. The process is reviewed on a regular basis and substantial knowledge of network performance as well as extensive data gathering has been yielded. Stirling Council also use GIS software for the inspection of gulley assets. All gullies are inspected on an annual cycle basis and if inspection shows silt levels greater than 50% then an additional inspection is required in 6 months. Both systems allow Stirling Council to track performance of assets. Stirling Council currently inspect 122km of watercourse annually.

There is consideration and refinement annually in maintenance schedules. The council will continue to seek methods of continuing a sustainable level of maintenance activities through resilience groups and risk-based approach to asset management.

Should any routine clearance work be required that cannot be carried out at the time of inspection, the work required to substantially reduce the risk of flooding is entered in a schedule of clearance and repair works and made available for public inspection. The Council's schedule of clearance and repair works is available upon request.

Stirling Council also has a number of rain gauges and cameras in the area to allow for continued monitoring at a number of key locations to allow better knowledge and understanding of flooding in areas

Falkirk Council will continue to operate and develop the cyclic risk- based priority inspection maintenance schedule and continue with a rolling programme of access improvements and screen replacement.

Clackmannanshire Council have operated a cyclical watercourse inspection and maintenance regime since 2011. This comprises a GIS based dataset of recorded key watercourse locations where flood risk is known to have been generated. These locations benefit from cyclical (minimum monthly) inspection and clearance activities carried out and reported on (to the council) by the Community Payback Teams with additional inspections and some works also carried out and reported on by volunteers managed by The Conservation Volunteers and by flood group members in Alva and Menstrie

Perth & Kinross Council's routine watercourse inspections are carried out either annually, six monthly or quarterly, depending on the flood risk associated with each watercourse.

Further reactive inspections have been carried out when issues have been highlighted or during times of flooding. Where a flood risk is identified, and clearance and repair works would substantially reduce that flood risk, then those works are included on the Council's clearance and repair schedule and carried out. The Council continues to inspect and maintain the formal flood schemes within its area, as per the existing inspection and maintenance regime. Road gullies will continue to be monitored and cleared as per the gulley monitoring programme.

Fife Council will continue to maintain the formal flood prevention / protection schemes within its area, as per the existing inspection and maintenance regime. Road gullies will

continue to be monitored and cleared as per the cully monitoring programme. Body of water inspections will be undertaken in key locations (i.e. risk-based approach) with maintenance programmes developed to suit. Alongside this, vegetation and silt management will be undertaken at key locations to ensure appropriate hydraulic operation.

## **1.5 Next steps and monitoring progress**

Flood risk management planning has progressed significantly in recent years. Scotland now has the most advanced, nationally consistent and locally informed understanding of the causes and consequences of flooding that it has ever had. Key partnerships have been developed and the plan-led approach has been strongly established through the first set of strategies and local flood risk management plans. Stirling Council and the other responsible authorities are committed to continuing 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 the Plan through ongoing joint working arrangements under the Local Plan District partnerships. Stirling Council 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 flood risk management plans 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.

A decision on grant funding is expected in time for the publication of the local flood risk management plans. As a result, there may be changes to the detail of actions, or the ability to deliver actions in the identified timescales, compared with this plan. 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 of Scotland. The delivery of the plan, particularly the ambitions on how quickly actions can be delivered, may have to be adapted to reflect

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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.

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 the **Annex** of this plan.

## 2 Flood Risk Management in the Forth Local Plan District

### 2.1 Local Flood Risk Management Plans 2022 – 2028

The Forth Local Plan District covers around 1,600km<sup>2</sup> and has a population of approximately 130,000 people. It covers an area from the Loch Lomond and Trossachs National Park in the west to the inner Forth Estuary in the east. The west is more mountainous, with steeper slopes and valleys. The east includes several urban areas in the low-lying, flatter regions. These include Stirling, Alloa, Bridge of Allan, Dunblane, Alva, Menstrie and Tillicoultry. A short coastline of approximately 74km lies to the east.

The area is largely rural with a mixture of agriculture, grasslands and woodlands. There are many lochs and reservoirs including Loch Katrine, Loch Venachar, Lake of Menteith, Loch Lubnaig Loch Voil and Gartmorn Reservoir. The largest river is the River Forth and its tributaries the River Teith and River Devon. There are smaller watercourses in the area that drain the Ochil Hills and flow into the River Devon.

There is a river, surface water, and coastal flood risk within the Local Plan District. The area was affected by several large floods, notably in December 2015 as a result of Storms Desmond and Frank and in January 2016 as a result of Storm Gertrude. More recently flash flooding from surface water led to widespread impacts in June and August 2019, August 2020 and December 2020.

Currently, it is estimated that there are around 15,000 people at risk from flooding and over 8,000 homes and businesses. This may increase to 23,000 people and 13,000 homes and businesses by the 2080s due to climate change. The expected annual cost of flooding over a long period of time is around £6.6 million.

SEPA lead development of the FRM Plan for Scotland and delivery of flood warning services. Local flood risk management planning for the Forth Local Plan District is led by Stirling Council who are the lead local authority. Other responsible authorities include, Clackmannanshire Council, Falkirk Council, Perth and Kinross Council, Fife Council, Scottish Water, and Loch Lomond and Trossachs National Park Authority. They are supported by Scottish Government agencies including Forestry and Land Scotland, Scottish Forestry and Transport Scotland.

Within the Forth 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.

## 2.2 Actions across the Local Plan District

SEPA, Stirling Council, Falkirk Council, Clackmannanshire Council, Fife Council and Perth and Kinross Council carry out actions in all areas of the Forth 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 across the Plan district

<b>National Action</b>	Awareness Raising Delivery time 2022-2028
Description	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. Local authorities undertake additional awareness raising activities when developing any specific project proposals and will engage with community resilience groups and local communities. 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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. All works and progress on works subject to funding.
Co-ordination	Delivery of actions to raise awareness will be coordinated by the responsible authorities through the Local Plan District Partnership.

National Action	Data to Support Climate Resilience Delivery time 2022-2028
Description	<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>
Funding	SEPA’s role in this action is funded by Scottish Government through SEPA’s grant in aid settlement.
Co-ordination	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.

National Action	Emergency Plans Delivery time 2022-2028
Description	<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.</p> <p>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>
Funding	SEPA’s role in this action is funded by Scottish Government through SEPA’s grant in aid settlement.
Co-ordination	Coordination when required is via East of Scotland Local Resilience Partnership



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

National Action	Flood Warning Development Framework
	Delivery time 2022-2028
Description	<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> <p>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.</p>
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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.

National Action	<p>Guidance development</p> <p>Delivery time :Draft flood studies guidance (SEPA) 2023</p> <p>Options appraisal &amp; Adaptation guidance (SG &amp; SEPA) 2023</p> <p>Other guidance &amp; updates 2023-2028</p>
Description	<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> <p>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.</p>
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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.

National Action	<p>Hazard Mapping Updates</p> <p>Delivery time 2022-2028</p>
Description	<p>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:</p> <p><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.</p>
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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.

National Action	Land Use Planning
	Delivery time 2022-2028
Description	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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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. Local authorities will continue to update and implement the most up to date planning guidance

National Action	Maintenance
Lead All	Delivery time 2022-2028
Description	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. In addition, local authorities may also be responsible for maintenance of any existing flood protection schemes or works. Scottish Water will continue to undertake risk-based inspection, maintenance and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Funding	All works and progress on works subject to funding. Funding for maintenance is secured within Scottish Water's operational budget under their investment plans.
Co-ordination	Local authorities to liaise with Scottish Water and relevant asset and land owners. Funding for maintenance is secured within Scottish Water's operational budget under their investment plans.

National Action	Natural Flood Management Mapping Delivery time 2025
Description	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 management measures can also provide many additional benefits to biodiversity, water quality, recreation, and carbon storage.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	SEPA will work with key stakeholders to review and update the opportunities mapping.

National Action	National Flood Risk Assessment Delivery time December 2024
Description	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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	SEPA will work with others as the NFRA is updated, including to keep other responsible authorities informed through the Local Plan District Partnerships.

National Action Lead SEPA	National Surface Water Mapping Delivery time 2024
Description	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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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 to verify, shape and understand the new mapping products.

National Action	Reservoirs
	Delivery time Ongoing / 2022-2028 Flood warning developments 2022-2024
Description	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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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.

National Action	Scottish Flood Defence Asset Database Delivery time 2022-2028
Description	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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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

National Action	Self Help Delivery time 2022-2028
Description	<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>  <a href="https://www.biba.org.uk/current-issues/flood-insurance/">https://www.biba.org.uk/current-issues/flood-insurance/</a>  <a href="https://floodlinescotland.org.uk/">https://floodlinescotland.org.uk/</a>  <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>
Funding	<p>SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>All works and progress on works subject to funding.</p>
Co-ordination	<p>Work by the responsible authorities to develop understanding and help communities reduce their risk will be coordinated through the Local Plan District Partnership.</p>

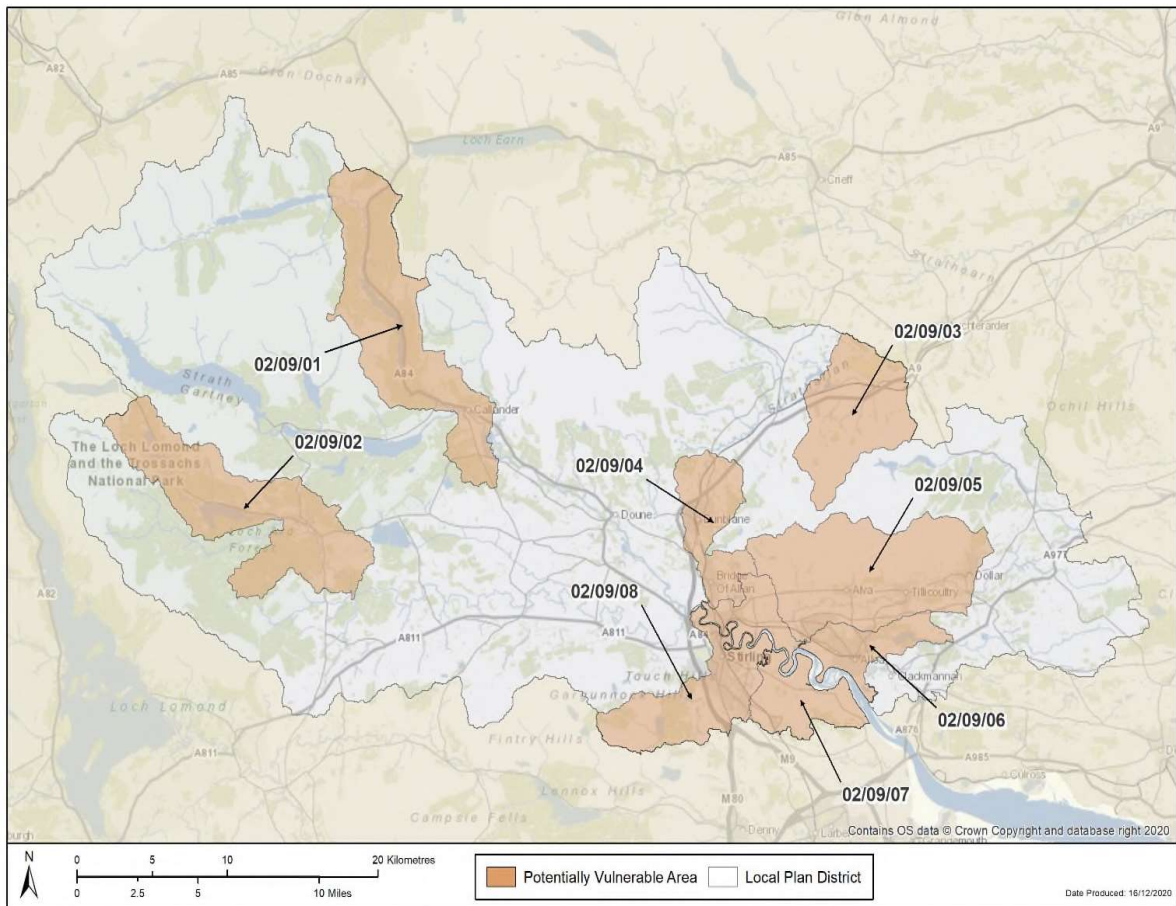


National Action	Future Flood Risk Management Planning Delivery time Ongoing / 2022-2028 Flooding services strategy 2023 Next flood risk management plans
Description	<p>The years covered by the lifetime of this plan are crucial. Radical progress is needed in how we reduce our impact on the climate and 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. These 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. 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> <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>
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Co-ordination	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

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

### 2.3 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 eight potentially vulnerable areas (PVA) in the Forth Local Plan District in this plan. The Following sections provide more information on these areas.



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**Figure 4. Potentially vulnerable areas in the Forth Local Plan District (2022-2028)**

## 2.4 LPD 9 Forth– List of PVAs

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

PVA Ref	PVA Name	Local authority area	Page number
02/09/01	<a href="#">Callander</a>	Stirling	27
02/09/02	<a href="#">Aberfoyle</a>	Stirling	35
02/09/03	<a href="#">Blackford</a>	Perth & Kinross	41
02/09/04	<a href="#">Dunblane and Bridge of Allan</a>	Stirling	46
02/09/05	<a href="#">Hillfoots Villages</a>	Clackmannanshire	56
02/09/06	<a href="#">Alloa</a>	Clackmannanshire	78
02/09/07	<a href="#">South Alloa</a>	Falkirk	83
02/09/08	<a href="#">Stirling</a>	Stirling	85

### 2.4.1 02/09/01 (Callander)

This area is designated as a potentially vulnerable area due to flood risk to Callander, Strathyre and the A84. The main source of flooding in Callander is the River Teith and its tributaries, and there is also a risk of flooding from surface water. There is a long history of frequent flooding in this area. Recent records of flooding include in December 2019 when surface water resulted in damage to businesses and during January 2020 when flooding caused damage 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.

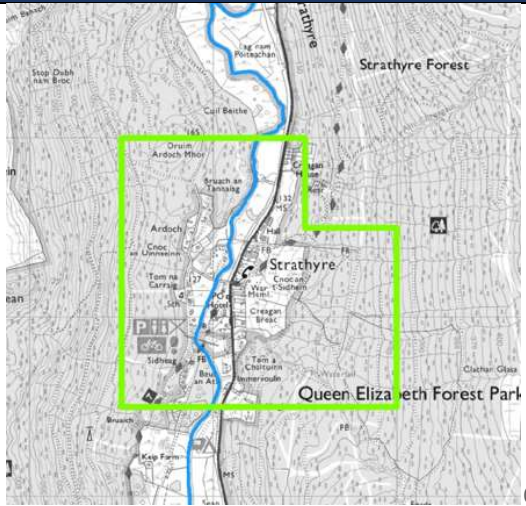
List of target areas

[Strathyre](#) (target area 171)

[Callander](#) (target area 208)

## Local Flood Risk Management plan datasheet

### 2.4.1.1 Strathyre 171

Summary	Location Map
<p>Strathyre is a village located in Stirlingshire within Loch Lomond and the Trossachs National Park. It is a new target area for inclusion in the 2021 Flood Risk Management Plans. The main source of flooding in Strathyre is river flooding, however there is also a risk of combined surface water and river flooding to the roads. There are approximately 80 people and 40 properties at risk from flooding. This is estimated to increase to 100 people and 50 properties by the 2080s due to climate change.</p>	 <p>Crown copyright and database rights 2022 Ordnance Survey 100020780 (Stirling Council). You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.</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 have been a number of floods recorded in this area. Flooding from the River Balvag caused damage to homes, gardens and agricultural land in 2006 and flooded businesses in Strathyre in 2015. There are also records of floods arising from small watercourses and runoff from the surrounding hillside since 2015.

Objective	ID	Description
Avoid flood risk	1711	Avoid inappropriate development that increases flood risk in Strathyre
Avoid flood risk	1712	Avoid an increase in flood risk in Strathyre by the appropriate protection, management and maintenance of the floodplain between Balquhider and Strathyre
Prepare for flooding	1713	Prepare for current flood risk and future flooding as a result of climate change in Strathyre
Reduce Flood Risk	1714	Reduce the risk of surface water flooding to local access roads in Strathyre
Reduce Flood Risk	1715	Reduce the risk of river flooding from the River Balvag and Loch Lubnaig in Strathyre and to A84

Action ID	Strathyre	17101
Action Type	Flood study	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	The study should quantify the flood risk from surface water and river sources identifying all flooding mechanisms and interactions between sources. If flood risk is confirmed, a scoping study should be carried out to assess options to manage flood risk in this community.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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.	
Action	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.	

Action ID	Strathyre	17102
Action Type	Community engagement	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Community engagement should be carried out based on the findings of the flood study.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Strathyre	17103
Action Type	Flood warning scoping	
Action Delivery Lead	SEPA	Indicative Delivery Second half of cycle
Description	Scoping for a river flood warning scheme will be carried out in Strathyre.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	Action delivery lead is SEPA and coordination will be determined once the action has been finalised. SEPA will work with Stirling Council on the potential to coordinate flood warning development with the flood study investigation	
Action	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.	

Action ID	Strathyre	17104
Action Type	Community resilience group	
Action Delivery Lead	Community Group	Indicative Delivery 2022-2028
Description	The Strathyre community resilience group should continue its work, including keeping the community resilience plan up to date, supported by Stirling Council. The resilience group operate a sandbag store. Local hydrometry information for the River Balvag is supplied by the council, and the group receive communications from the council when poor weather is anticipated.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is the community and coordination will be determined once the actions have been finalised.	
Action	The group of community volunteers work to prepare and put in practice their Community Resilience Plan and be supported by the local authority.	

Action ID	Strathyre	17105
Action Type	Land use planning	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	A Local Development Plan is required for each council area across Scotland. It allocates sites, either for new development, such as housing, or sites to be protected. It also includes policies that guide decisions on all planning applications. In this area, SEPA and Stirling Council should agree how the protection, management and maintenance of the floodplain between Balquhiddy and Strathyre can be protected through the local development planning process	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	Planning authority should ensure that their development plan and planning decision-making supports delivery of sustainable flood management.	



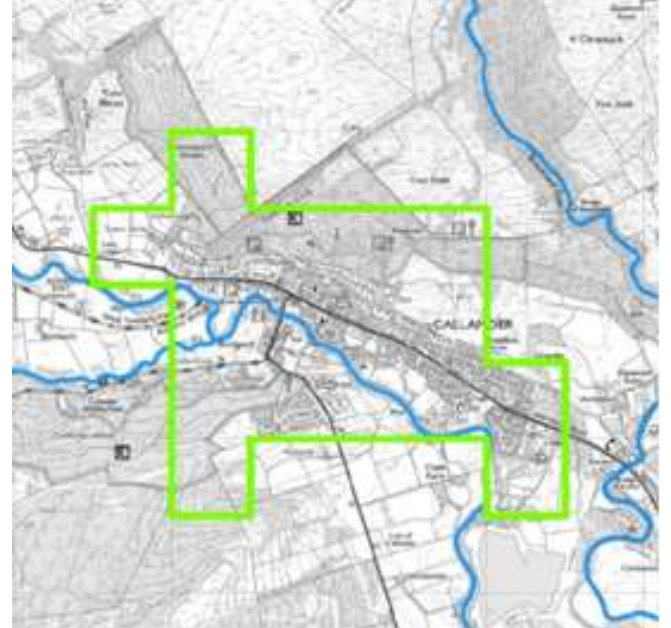
## Local Flood Risk Management plan datasheet

### 2.4.1.2 Callander 208

#### Summary

Callander is a small town in the Loch Lomond and the Trossachs National Park, within the Stirling Council area. The main source of flooding in Callander is river flooding, however there is also risk from surface water. There are approximately 190 people and 120 homes and businesses currently at risk from flooding. This is likely to increase to 330 people and 210 homes and businesses by the 2080s due to climate change.

#### Location Map



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#### 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 carried out by the local authority in support of the Callander Flood Protection Scheme. The national understanding of 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 is a long history of flooding in Callander with frequent records of flooding from the River Teith and surface water. There are recent records of flooding including in December 2019 when surface water flooding resulted in damage to businesses and during January 2020 when flooding caused damage to homes and businesses.

Objective	ID	Description
Avoid flood risk	2081	Avoid inappropriate development that increases flood risk in Callander
Avoid flood risk	2082	Avoid an increase in flood risk by the appropriate management and maintenance of Callander Flood Protection Scheme
Prepare for flooding	2083	Prepare for current flood risk and future flooding as a result of climate change in Callander
Reduce Flood Risk	2084	Reduce the risk of river flooding from the River Teith in Callander
Reduce Flood Risk	2085	Reduce the risk of surface water flooding in Callander



Action ID	Callander	20801
Action Type	Flood scheme or works design	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Development of the Callander Flood Protection Scheme should continue into detailed design as planned, subject to favourable option assessment. If the designed scheme is feasible and acceptable to stakeholders construction of the scheme will commence.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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.	
Action	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.	

Action ID	Callander	20802
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	The Callander Flood Protection Scheme should proceed to construction provided the designed scheme is feasible, acceptable to stakeholders and funding is available.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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 an update to SFDAD and flood warning actions.	
Action	The flood scheme/works is to be built following agreement of the design, costs and timescales.	

Action ID	Callander	20803
Action Type	Flood defence maintenance	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Stirling Council should commence the inspection and maintenance regime for the Callander Flood Protection Scheme once completed.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.	

Action ID	Callander	20804
Action Type	Surface water management plan	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Stirling Council should continue development and implementation of the surface water management plan. This should be reviewed and updated regularly, and the results of sewer modelling should be considered.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordinated with Scottish Water and other actions in the area.	
Action	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.	

Action ID	Callander	20805
Action Type	Community engagement	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Awareness raising and continued engagement should be developed based on development of the flood protection scheme and findings of the surface water management plan. This aims to ensure that the scheme is carried out in conjunction with community engagement where issues, constraints, aspirations and opportunities are identified.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Callander	20806
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery First half of cycle
Description	SEPA should maintain the Teith flood warning scheme. The scheme should be investigated for improvement and/or recalibration as part of the Upper Forth project.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Any Stirling Council works and progress on works subject to funding.	
Coordination	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Stirling Council on the potential to coordinate flood warning improvements with the flood study investigation and flood scheme works. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

## 2.4.2 02/09/02 (Aberfoyle)

This area is designated as a potentially vulnerable area due to flood risk to Aberfoyle and the A821. The main source of flooding is the River Forth and Duchray Water, with some risk of flooding from surface water. There is a long history of flooding in Aberfoyle, with recent river and surface water floods.

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

Aberfoyle (target area 184)

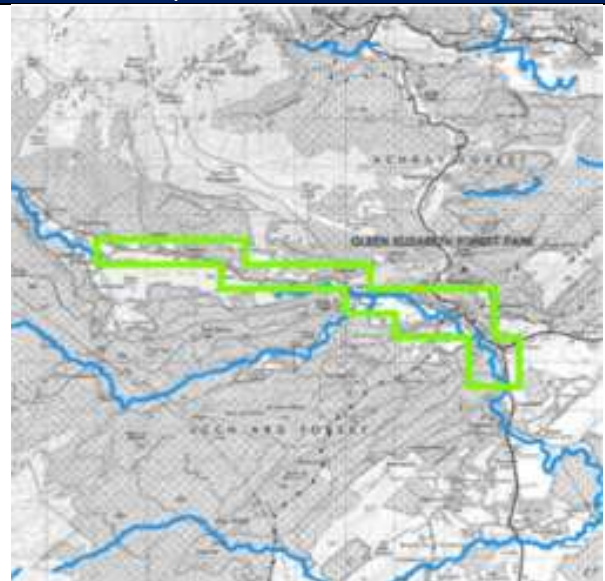
#### Local Flood Risk Management plan datasheet

##### 2.4.2.1 Aberfoyle 184

#### Summary

Aberfoyle is a village located within the Stirling Council area and the Loch Lomond and Trossachs National Park. The area extends from Aberfoyle up the B829, along the north shore of Loch Ard to Kinlochard. The main source of flooding in Aberfoyle is river flooding, however there is also a risk of surface water flooding. There are approximately 250 people, and 160 homes and businesses currently at risk of flooding. This is likely to increase to 260 people, and 170 homes and businesses by the 2080s due to climate change.

#### Location Map



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### 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 for river flooding is improved by a local authority flood study in support of the Aberfoyle Flood Protection Scheme (2019). The study considers the River Forth, Duchray Water and their tributaries in the local area. There is a long history of flooding in the Aberfoyle area with frequent flooding to roads occurring between 3 to 6 times annually. Roads, homes and businesses have been impacted by floods in December 2006, August 2009, November 2012, December 2015, January 2016, and February 2020. A recent flood was recorded in August 2020 when flooding caused road closures cutting off rural communities for a day. A further recent flood was recorded in February 2021.

Objective	ID	Description
Avoid flood risk	1841	Avoid inappropriate development that increases flood risk in Aberfoyle.
Prepare for flooding	1842	Prepare for current flood risk and future flooding as a result of climate change in Aberfoyle
Reduce flood risk	1843	Reduce the risk of river flooding from the River Forth and Duchray Water in Aberfoyle and the A821 and B829
Reduce flood risk	1884	Reduce the risk of surface water flooding on the A821 and B829

Action ID	Aberfoyle	18401
Action Type	Flood scheme or works design	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	<p>The outline design for Aberfoyle Flood Protection Scheme has been completed with some elements at a detailed design. The scheme incorporates flood defences, floodplain connectivity measures, a solution for surface water drainage behind defences and protection measures against erosion. It also proposes potential additional catchment wide measures such as peatbog restoration, wetland creation and tree planting. Impacts of flooding in this location include additional social, commercial and amenity considerations. In further development of the scheme, current and long term flood risk should be considered and how the flood protection scheme 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 Trossachs Woods Special Area of Conservation.</p>	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	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.	

Action ID	Aberfoyle	18402
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	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. Once detailed design is complete the Aberfoyle Flood Protection Scheme should progress to the procurement and construction phase.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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 an update to SFDAD and flood warning actions.	
Action	The flood scheme/works is to be built following agreement of the design, costs and timescales.	

Action ID	Aberfoyle	18403
Action Type	Community engagement	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Awareness raising and community engagement is being carried out through community projects. Stirling Council will continue to keep the community aware of progress with flood protection scheme development and will arrange more detailed further engagement as may be required. This aims to ensure that the scheme is carried out in conjunction with community engagement where issues, constraints, aspirations and opportunities are identified.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	



Action ID	Aberfoyle	18404
Action Type	Community resilience group	
Action Delivery Lead	Community Group	Indicative Delivery 2022-2028
Description	Aberfoyle Community Council have a flood resilience function and will continue its activities in engaging and liaising with the community, the Loch Lomond and the Trossachs National Park and Stirling Council. Stirling Council should continue to support the community and provide information and assistance. The previous resilience group has disbanded and Stirling Council are working with Strathard Community Trust to develop a plan for the area. Where communities are prepared to develop community resilience plans the council facilitate development of the plans and provide a stock of aqua sacs as part of flood pods for emergency use as part of the plan. Stirling Council will also work with Trossachs Search and Rescue to develop a relationship to support in extreme weather events to help support in vulnerable and remote areas.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is the community and coordination will be determined once the actions have been finalised.	
Action	The group of community volunteers work to prepare and put in practice their Community Resilience Plan and be supported by the local authority.	

Action ID	Aberfoyle	18405
Action Type	Surface water management plan	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Stirling Council should develop and implement a surface water management plan for Aberfoyle in order to better understand surface water flood risk and mechanisms, and in the longer term look at possible action to manage the risk. The main risk of surface water is to the roads, notably the A821 and B829.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	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.	

Action ID	Aberfoyle	18406
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery Ongoing
Description	SEPA should maintain the Aberfoyle flood warning scheme.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Stirling Council on the potential to use information on the Aberfoyle flood scheme to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

### 2.4.3 02/09/03 (Blackford)

This area is designated as a potentially vulnerable area due to flood risk to Blackford. The main source of flooding in Blackford is river flooding from the Danny Burn and other small watercourses. There is some history of flooding. Most recently, two homes and one business were flooded in February 2020, while high flow events occurred in August 2019 and February 2021.

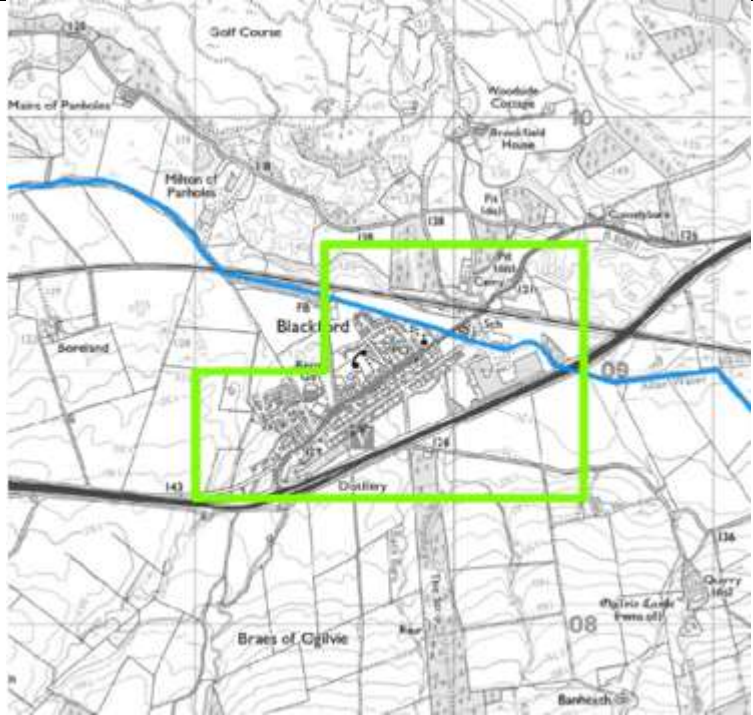
There is 1 target area in this potentially vulnerable area, which has been the focus of further assessment, this is identified below. Further information on the objectives and actions to manage flood risk within this area is provided below.

#### List of target areas

[Blackford](#) (target area 198)

#### Local Flood Risk Management plan datasheet

##### 2.4.3.1 Blackford 198

Summary	Location Map
<p>The village of Blackford is located around 8km from Auchterarder and within the Perth and Kinross Council area. The main source of flooding in Blackford is river flooding from the Danny Burn and small watercourses. The local authority has carried out a flood study in this area which estimated that there are approximately 32 homes and 6 businesses currently at risk from flooding.</p>	 <p>© Crown copyright and database rights 2022 Ordnance Survey 100020780 (Stirling Council). You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.</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 for river flooding is improved by the Blackford Flood Study. There are records of flooding in this area. On 13 December 2006 properties in Abercairney Place, Blackford and surrounding areas were flooded. Recent notable floods include August 2019 and February 2020. In February 2020, 2 homes and 1 business flooded following Storm Dennis

Objective	ID	Description
Avoid flood risk	1981	Avoid development that increases flood risk in Blackford
Prepare for flooding	1982	Prepare for current flood risk and future flooding as a result of climate change in Blackford
Reduce flood risk	1983	Reduce the risk of river flooding from the Allan Water, Danny Burn, Burn of Ogilvie, Back Burn and Kinpauch Burn in Blackford.

Action ID	Blackford	19801
Action Type	Flood Protection Scheme	
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery To be confirmed (subject to funding)
Description	<p>A flood protection scheme has been proposed in this area. The proposed scheme involves a combination of river flow diversions, direct flood defences and natural flood management. It aims to provide a 1 in 200-year standard of protection. Current and long-term flood risk will be further considered at the design stage including the impacts of climate change and scheme adaptability. The outline design for the Blackford Flood Protection Scheme will be progressed, in line with the recommendations of the Blackford Flood Study. This work will also include ongoing community engagement as the project progresses.</p> <p>Once the flood protection scheme has been confirmed and the detailed design completed, the next stages will involve procurement and construction.</p> <p>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.</p> <p>Routine inspections and maintenance of the Blackford Flood Protection Scheme will commence when the scheme is complete in accordance with the inspection and maintenance regime.</p>	
Funding	The delivery of this action is subject to capital funding being made available by the Scottish Government and within Perth and Kinross Council's capital programme.	
Coordination	<p>The Blackford Flood Protection Scheme will be coordinated through the Forth Local Plan District Partnership. The flood protection scheme will be coordinated with other related actions.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD.</p>	
Action	The outline design of the flood scheme will commence once capital funding is secured.	

Action ID	Blackford	19802
Action Type	Community Engagement	
Action Delivery Lead	Perth and Kinross Council	Indicative Delivery On-going
Description	Community engagement will continue in connection with ongoing projects and activities. Perth and Kinross Council will continue to coordinate with the Blackford Community Council on a priority needs basis where resources allow.	
Funding	Community engagement activities will be funded from local authority revenue budgets. All business activities required under this action by Scottish Water are accounted for in their capital or operational expenditure.	
Coordination	<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> <p>SEPA and responsible authorities will coordinate awareness raising activities with any related actions.</p>	
Action	Community engagement will continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Blackford	19803
Action Type	<b>Community resilience group</b>	
Action Delivery Lead	Community Group	Indicative Delivery
Description	Perth and Kinross Council will continue to communicate with and support the Blackford Community Council on flood risk matters. The resilience plans should be updated regularly by the group and this will be supported by the Council	
Funding	Funding for Community resilience groups will be provided by private individuals, businesses, organisations or communities at risk of flooding.	
Coordination	Perth and Kinross Council will continue to coordinate with the Blackford Community Council on a priority needs basis where resources allow. The Council will coordinate community resilience groups with any related actions.	
Action	The group of community volunteers will work to prepare and put in practice their Community Resilience Plan with support from Perth and Kinross Council.	



## 2.4.4 02/09/04 (Dunblane and Bridge of Allan)

This area is designated as a potentially vulnerable area due to flood risk to Dunblane and Bridge of Allan from the Allan Water and surface water. Existing flood protection schemes offer protection against frequent river flooding in Bridge of Allan. There is a long history of flooding in this area, with recent river flooding during Storm Dennis.

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

Bridge of Allan (target area 204)  
Dunblane (target area 223)

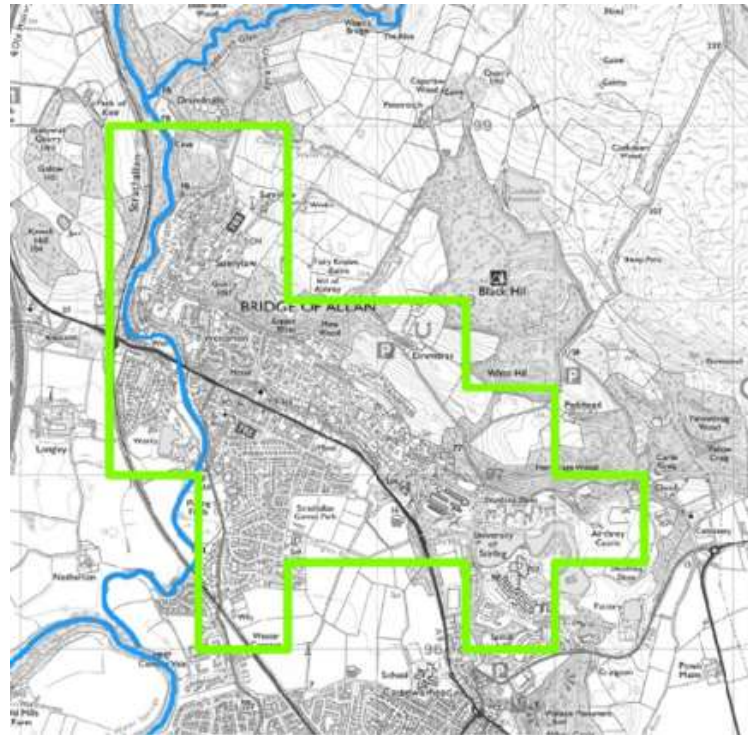
### Local Flood Risk Management plan datasheet

#### 2.4.4.1 Bridge of Allan 204

##### Summary

Bridge of Allan is located just north of Stirling within the Stirling Council area. The main source of flooding is river flooding from the Allan Water, however there is also a risk from surface water. There are approximately 1,100 people and 540 homes and businesses currently at risk from flooding. This is likely to increase to 3,100 people and 1,500 homes and businesses by the 2080s due to climate change.

##### Location Map



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### 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 Bridge of Allan carried out by the local authority in support of the Bridge of Allan Flood Protection Scheme. Understanding of surface water flooding is improved by an integrated catchment study, a surface water management plan and a sewer flood risk assessment carried out by Scottish Water and the local authority. Bridge of Allan has a long history of flooding from the Allan Water. Homes, businesses and transport have been impacted by flooding in 2006, 2012 and 2015. Recent flood in February 2020 resulted in damage to homes, businesses and transport.

Objective	ID	Description
Avoid flood risk	2041	Avoid inappropriate development that increases flood risk in Bridge of Allan
Avoid flood risk	2042	Avoid an increase in flood risk by the appropriate management and maintenance of Bridge of Allan flood protection scheme
Prepare for flooding	2043	Prepare for current flood risk and future flooding as a result of climate change in Bridge of Allan
Reduce flood risk	2044	Reduce the risk of river flooding from the Allan Water in Bridge of Allan
Reduce flood risk	2045	Reduce the risk of surface water flooding in Bridge of Allan.

Action ID	Bridge of Allan	20401
Action Type	Flood scheme or works design	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	The development of the Bridge of Allan Flood Protection Scheme should continue as scheduled, with the next step being detailed design. Some surface water flooding problems immediately behind the flood defences will be tackled as part of the scheme. Current and long term flood risk should be considered and how the scheme will adapt to changes in flood risk due to climate change.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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.	
Action	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.	

Action ID	Bridge of Allan	20402
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	The Bridge of Allan Flood Protection Scheme should proceed to construction provided the designed scheme is feasible, acceptable to stakeholders and funding is available.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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 an update to SFDAD and flood warning actions.	
Action	The flood scheme/works is to be built following agreement of the design, costs and timescales.	

Action ID	Bridge of Allan	20403
Action Type	Community engagement	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Awareness raising should be carried out based on the outcomes of the flood scheme development and surface water management plan. Engagement between Stirling Council and the community council should continue. This aims to ensure that the scheme is carried out in conjunction with community engagement where issues, constraints, aspirations and opportunities are identified.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Bridge of Allan	20404
Action Type	Sewer flood risk assessment	
Action Delivery Lead	Scottish Water	Indicative Delivery 2024-2026
Description	Scottish Water will undertake a modelling assessment in the Stirling sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009	
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	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	

Action ID	Bridge of Allan	20405
Action Type	Surface water management plan	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Stirling Council have produced a surface water management plan for the northern part of Bridge of Allan backing onto the Sheriffmuir hills in response to severe flooding in August 2012. Potential options have been explored through those assessments but no simple or short-term solutions were identified. The options require further development in conjunction with the results from the integrated catchment study to provide solutions for the whole community. The Council should develop and implement an overarching surface water management plan covering all of Bridge of Allan in order to better understand surface water flood risk and mechanisms across the whole area. The plan should consider the results of the integrated catchment study and include a high level assessment of actions.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordinated with Scottish Water and other actions in the area.	
Action	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.	

Action ID	Bridge of Allan	20406
Action Type	Flood defence maintenance	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	The existing Bridge of Allan Flood Protection Scheme continues to be monitored and remedial work carried out when required.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.	

Action ID	Bridge of Allan	20407
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery First half of cycle
Description	SEPA should maintain the Stirling flood warning scheme. The scheme should be investigated for improvement and/or recalibration as part of the Upper Forth project.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Stirling Council on the potential to coordinate flood warning improvements with the flood study investigation and flood scheme works. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

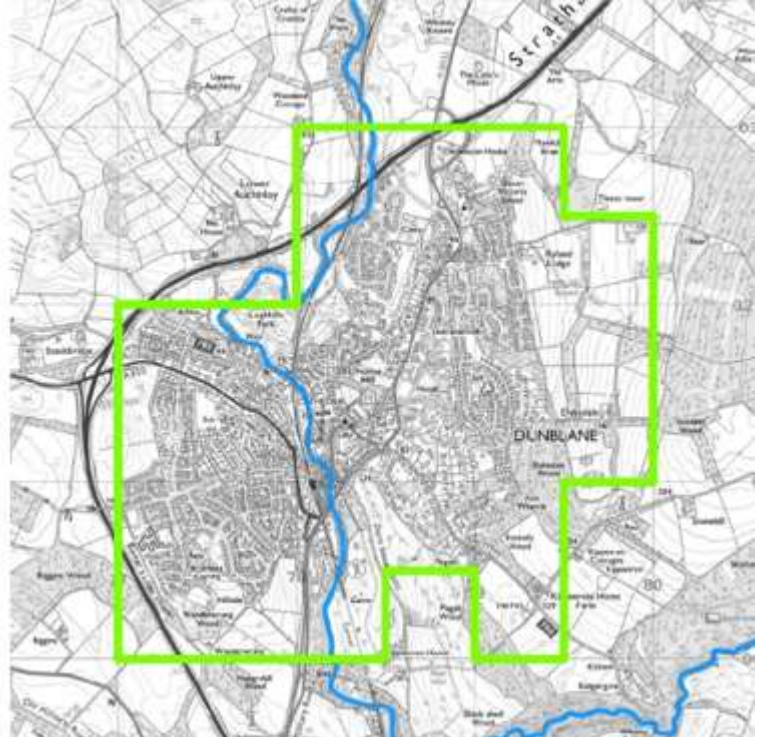
## Local Flood Risk Management plan datasheet

### 2.4.4.2 Dunblane 223

#### Summary

The town of Dunblane is located north of Stirling, on the banks of the Allan Water and within the Stirling Council area. The main sources of flooding in Dunblane are surface water and river flooding. There are approximately 820 people and 420 homes and businesses currently at risk from flooding. This is likely to increase to 960 people and 490 homes and businesses by the 2080s due to climate change.

#### Location Map



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#### 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. Understanding of 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 is a long history of flooding in Dunblane, with a notable flood in August 2012 resulting in surface water flooding of homes and businesses, causing major infrastructure damage to roads and the railway line closed. A number of further surface water events have occurred impacting similar locations. The most recent flooding was recorded in 2018 when surface water flooding affected Clarendon Place.



Objective	ID	Description
Avoid flood risk	2231	Avoid inappropriate development that increases flood risk in Dunblane
Prepare for flooding	2232	Prepare for current flood risk and future flooding as a result of climate change in Dunblane
Reduce flood risk	2233	Reduce the risk of flooding from small watercourses in Dunblane
Reduce flood risk	2234	Reduce the risk of surface water flooding in Dunblane

Action ID	Dunblane	22301
Action Type	Flood scheme or works implementation	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	It is anticipated that some smaller scale local works to reduce surface water flood risk can be undertaken by Stirling Council and Scottish Water to reduce the flood risk to the largest cluster of properties in Dunblane.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council in coordination with Scottish Water and other actions in the area. SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD.	
Action	The flood scheme/works is to be built following agreement of the design, costs and timescales.	

Action ID	Dunblane	22302
Action Type	Surface water management plan	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	The surface water management plan for Dunblane is ongoing. The local authority should continue the implementation of actions identified in the plan, including potential joint working with Scottish Water. The surface water management plan should be reviewed and updated regularly.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council in coordination with Scottish Water and other actions in the area.	
Action	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.	



Action ID	Dunblane	22303
Action Type	Flood study	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Updates to the existing flood modelling (river flood risk) may be required if gaps are identified by the surface water management plan. Modelling updates should quantify flood risk from small watercourses, identifying all flooding mechanisms. Flood risk should be quantified for present day and future flood risk and the interaction between surface water and river flooding should be assessed. If a significant change in the understanding of river flood risk is shown, a scoping study may be required to identify further detailed studies and works required to reduce this risk.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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.	
Action	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.	

Action ID	Dunblane	22304
Action Type	Community engagement	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Community engagement and awareness raising is to continue based on the findings of the flood studies.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Dunblane	22305
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery First half of cycle
Description	SEPA should maintain the Stirling flood warning scheme. The scheme should be investigated for improvement and/or recalibration as part of the Upper Forth project.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Stirling Council on the potential to coordinate flood warning improvements with the flood study investigation and flood scheme works. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

#### 2.4.5 02/09/05 (Hillfoots Villages)

This area is designated as a potentially vulnerable area due to flood risk to a number of Hillfoots communities including Alva, Dollar, Menstrie and Tillicoultry. The main sources of flooding are the River Devon, small burns running off the Ochil Hills and surface water. There is a long history of flooding in this area, with recent river and surface water causing flooding of homes, roads and fields.

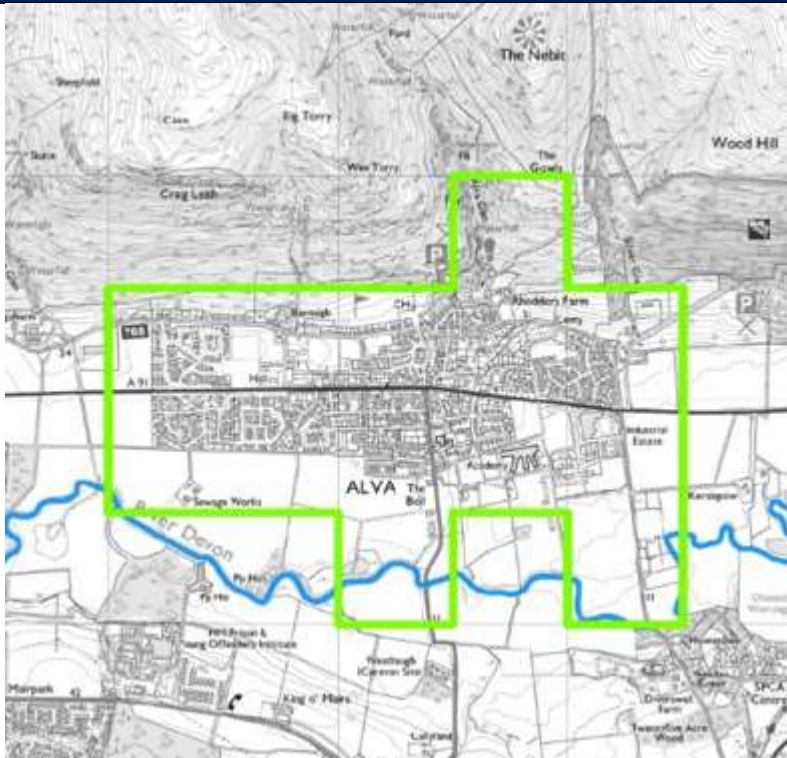
There are 4 target areas in this potentially vulnerable area, which have been the focus of further assessment. These are listed below. Further information on the objectives and actions to manage flood risk within this area is provided below.

##### List of target areas

Alva	(target area 188)
Dollar	(target area 221)
Menstrie	(target area 248)
Tillicoultry	(target area 260)

## Local Flood Risk Management plan datasheet

### 2.4.5.1 Alva 188

Summary	Location Map
<p>The small town of Alva is located within the Clackmannanshire Council area. The main source of flooding in Alva is surface water, however there is also a risk from river flooding. There are approximately 1,100 people and 580 homes and businesses currently at risk from flooding. This is estimated to increase to 1,500 people and 760 homes and businesses by the 2080s due to climate change.</p>	 <p>© Crown copyright and database rights 2022 Ordnance Survey 100020780 (Stirling Council). You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.</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 by a strategic surface water management plan published in 2018 and a sewer flood risk assessment. There are records of surface water and river flooding in the area, including a recent river flood from the River Devon, the Alva Burn and other smaller burns in Alva during 2020 and 2021.

Objective	ID	Description
Avoid flood risk	1881	Avoid inappropriate development that increases flood risk in Alva.
Prepare for flooding	1882	Prepare for current flood risk and future flooding as a result of climate change in Alva.
Reduce flood risk	1833	Reduce the risk of flooding from surface water, Alva Burn, Carnaughton Burn, Spring Burn, Silver Burn and small watercourses to Alva
Reduce flood risk	1884	Reduce the risk of flooding from the River Devon to the B908 and Shavelhaugh Loan

Action ID	Alva		18801
Action Type	<b>Flood study</b>		
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery	2022-28
Description	Flood risk from the River Devon to the B908 and Shavelhaugh Loan and risk to urban areas in Alva has been noted. A flood study, consisting of the initial stages of flood modelling and scoping of flood risk management options to manage flood risk, including the risk of key road closures, should be carried out by the local authority. Flood studies should consider all relevant sources of flooding and investigate a range of flood scenarios including the potential impacts of climate change.		
Funding	All works and progress on works subject to funding.		
Coordination	Action delivery lead is Clackmannanshire 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.		
Action	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.		

Action ID	Alva	18802
Action Type	<b>Flood study (options appraisal)</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	The strategic surface water management plan recommended that a more detailed assessment is required in Rhodders Grove and Grodwell Drive areas in Alva. This more detailed assessment should be taken forward by Clackmannanshire Council.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council and coordination will be required with Scottish Water.	
Action	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.	

Action ID	Alva	18802
Action Type	<b>Flood study (options appraisal)</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	The strategic surface water management plan recommended that a more detailed assessment is required in Rhodders Grove and Grodwell Drive areas in Alva. This more detailed assessment should be taken forward by Clackmannanshire Council.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council and coordination will be required with Scottish Water.	
Action	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.	

Action ID	Alva	18803
Action Type	<b>Surface water management plan</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	Clackmannanshire Council published a strategic surface water management plan in December 2018. 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	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with Scottish Water.	
Action	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.	

Action ID	Alva	18804
Action Type	<b>Community Engagement</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	Wider community engagement will continue to be developed in partnership with the Alva Community Resilience Team, Scottish Flood Forum and The Conservation Volunteers. The engagement will also support the completion of detailed studies and a surface water management plan.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with the Scottish Flood Forum, Alva Community Resilience Team and The Conservation Volunteers.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Alva	18805
Action Type	<b>Community Resilience Group</b>	
Action Delivery Lead	Community Group	Indicative Delivery 2022-2028
Description	Clackmannanshire Council should continue to support the Alva Community Resilience Team.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is the Alva Community Resilience Team in coordination with Clackmannanshire Council.	
Action	The group of community volunteers work to prepare and put in to practice their Community Resilience Plan Actions and be supported by the local authority.	



Action ID	Alva	18806
Action Type	<b>Community flood alert</b>	
Action Delivery Lead	Clackmannanshire Council / Scottish Flood Forum	Indicative Delivery 2022-28
Description	A river level alerting system has been installed on the Alva Burn. The system is operational as of November 2020 with support from Clackmannanshire Council and the Scottish Flood Forum.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is the community flood group and coordination will be determined once the actions have been finalised.	
Action	The community river level alerting system should continue to be operated and maintained to provide information on high water levels which could potentially lead to localised flooding.	

Action ID	Alva	18807
Action Type	<b>Flood Warning</b>	
Action Delivery Lead	SEPA	Indicative Delivery Ongoing
Description	SEPA should maintain the River Devon flood warning scheme.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Clackmannanshire Council works and progress on works subject to funding.	
Coordination	The action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Clackmannanshire Council on the potential to use information from the flood studies and scheme to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required	



Objective	ID	Description
Avoid flood risk	2211	Avoid inappropriate development that increases flood risk in Dollar
Prepare for flooding	2212	Prepare for current flood risk and future flooding as a result of climate change in Dollar
Reduce flood risk	2213	Reduce the risk of flooding from surface water to Dollar

Action ID	Dollar	22101
Action Type	<b>Flood study</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	A flood study should be undertaken for Dollar to improve understanding of flood risk from the River Devon, Dollar Burn, Kelly Burn and Quarrel Burn. The study should consider groundwater flood risk and also surface water flood risk as identified by the strategic surface water management plan. The flood study will be required to consider strategic management options and the potential impacts of climate change.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council. Coordination requirements will be determined once actions have been finalised. SEPA will work with the local authority on the potential to coordinate this action with flood warning actions.	
Action	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.	

Action ID	Dollar	22102
Action Type	<b>Surface water management plan</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-2028
Description	Clackmannanshire Council published a strategic surface water management plan in December 2018. 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.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with Scottish Water.	
Action	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 overwhelmed drainage systems have been identified and should be implemented. The plan is to be reviewed and updated as needed.	

Action ID	Dollar	22103
Action Type	<b>Community Engagement</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	Community engagement should be carried out in partnership with established local flood groups in Dollar, Scottish Flood Forum and The Conservation Volunteers to support detailed studies and a surface water management plan.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council and coordination will be required with the Scottish Flood Forum and The Conservation Volunteers.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

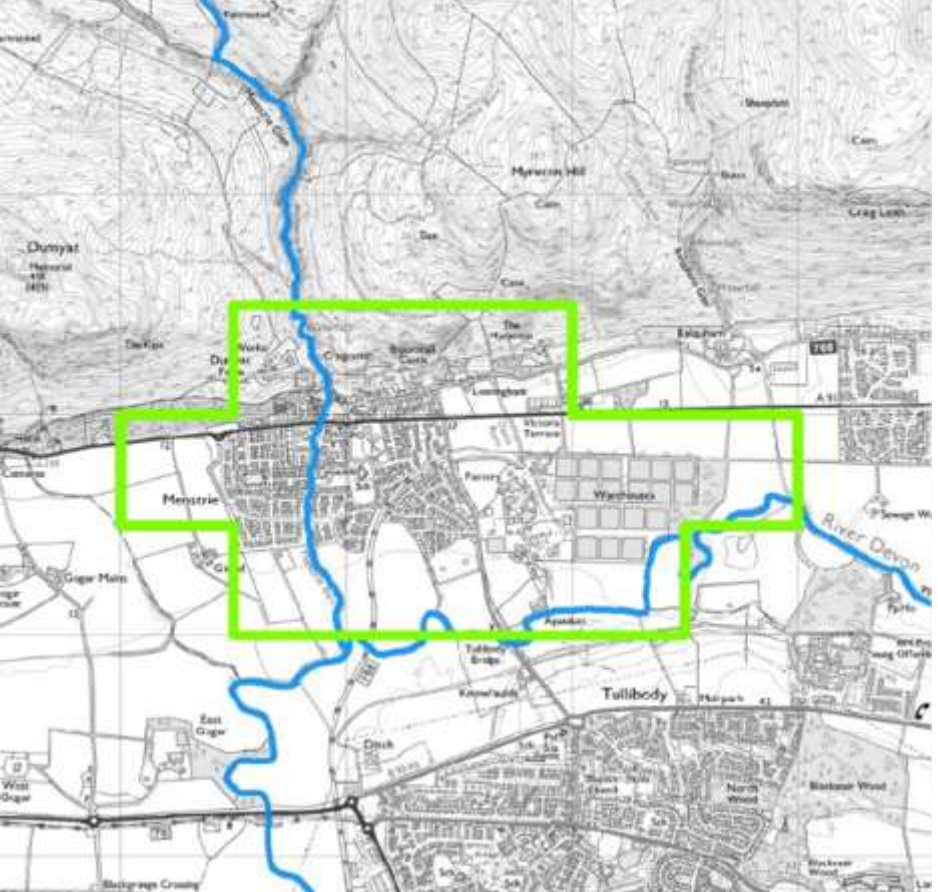
Action ID	Dollar	22104
Action Type	<b>Community resilience group</b>	
Action Delivery Lead	Community group	Indicative Delivery 2022-28
Description	Clackmannanshire Council should continue efforts to support and amalgamate the community resilience groups established in Dollar. Work has commenced on the local flood plan for Dollar in partnership with Scottish Flood Forum and the council.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council.	
Action	The group of community volunteers work to prepare and put in practice their Community Resilience Plan and be supported by the local authority.	

Action ID	Dollar	22105
Action Type	<b>Community flood alert</b>	
Action Delivery Lead	Clackmannanshire Council/ Scottish Flood Forum	Indicative Delivery 2022-28
Description	The potential to install a community flood alerting system on the Dollar Burn should be investigated. This would provide a trigger for local responses to flooding including actions by existing community resilience groups and access to flood pods.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead will be determined once the actions have been finalised. The action will be coordinated with Scottish Flood Forum, Clackmannanshire Council and the community.	
Action	A community river level alerting system is to be installed to provide information on the potential for localised flooding.	

Action ID	Dollar	22106
Action Type	<b>Flood warning maintenance</b>	
Action Delivery Lead	SEPA	Indicative Delivery Ongoing
Description	SEPA should maintain the River Devon flood warning scheme.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Clackmannanshire Council works and progress on works subject to funding.	
Coordination	The action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Clackmannanshire Council on the potential to use information from the flood studies and scheme to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

## Local Flood Risk Management plan datasheet

### 2.4.5.3. Menstrie 248

Summary	Location Map
<p>The village of Menstrie is located within the Clackmannanshire Council area. The main sources of flooding in Menstrie are river and surface water flooding. The local authority carried out a flood study for Menstrie Burn which showed that there are 34 homes and businesses at risk of river flooding. A surface water management plan identified a further 288 homes and businesses at risk of surface water flooding.</p>	 <p>© Crown copyright and database rights 2022 Ordnance Survey 100020780 (Stirling Council). You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.</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 a flood study for Menstrie completed in 2019. Understanding of surface water flooding is improved by a strategic surface water management plan completed in 2018 and a sewer flood risk assessment. There are records of flooding in the area from rivers and surface water. A notable flood occurred in August 2012 when a care home, 100 houses and many vehicles were damaged.



Objective	ID	Description
Avoid flood risk	2481	Avoid inappropriate development that increases flood risk in Menstrie
Prepare for flooding	2482	Prepare for current flood risk and future flooding as a result of climate change in Menstrie
Reduce flood risk	2483	Reduce the risk of surface water flooding and flooding from the Menstrie Burn to Menstrie

Action ID	Menstrie	24801
Action Type	<b>Property flood resilience scheme</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	Property flood resilience measures and enhanced community flood pod facilities should continue to be promoted by the local authority, SEPA and Scottish Flood Forum. Further funding mechanisms for property flood resilience purchase should be investigated and where possible installed. These include enhancement and addition to the 4 community flood pods currently provided by the council, as well as promotion of the use of individual property resilience measures. Ochilview Housing Association have a programme in place, as advised by the Scottish Flood Forum and the Council, to install property flood resilience measures to protect their at risk properties in the Charrier area.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council. Coordination will be required with SEPA, Scottish Flood Forum and the Ochilview Housing Association.	
Action	The proposed scheme to provide resilience measures against flooding for individual buildings is to be taken forward to help prevent water entering the property and to minimise flood damage.	



Action ID	Menstrie	24802
Action Type	<b>Sewer flood risk assessment</b>	
Action Delivery Lead	Scottish Water	Indicative Delivery 2023-25
Description	Scottish Water will undertake a modelling assessment in the Alloa sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009	
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. Outputs of this modelling assessment will be shared with local authorities and SEPA	
Action	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.	

Action ID	Menstrie	24803
Action Type	<b>Flood study (options appraisal)</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	The strategic surface water management plan recommended a detailed modelling study for Menstrie. This would further improve understanding of surface water flood risk in the area surrounding Blackthorn Grove and East Mains.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council and coordination will be required with active travel plans and wider developments in the area.	
Action	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.	

Action ID	Menstrie	24804
Action Type	<b>Surface water management plan</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	Clackmannanshire Council published a strategic surface water management plan in December 2018. 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.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with Scottish Water.	
Action	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.	

Action ID	Menstrie	24805
Action Type	<b>Community Engagement</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	Community engagement should be carried out in support of the detailed studies and a surface water management plan.	
Funding	Funding will be secured via normal revenue budgets	
Coordination	Action delivery lead is Clackmannanshire Council and coordination will be determined once the actions have been finalised.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Menstrie	24806
Action Type	<b>Community resilience group</b>	
Action Delivery Lead	Community Group	Indicative Delivery 2022-2028
Description	The Menstrie Community Resilience Group operates in this area and liaises with the local authority to help provide information and assistance when requested. These activities should continue.	
Funding	Funding will be secured via normal revenue budgets	
Coordination	Action delivery lead is the community and coordination will be required with Clackmannanshire Council.	
Action	The group of community volunteers work to prepare and put in practice their Community Resilience Plan and be supported by the local authority.	

Action ID	Menstrie	24807
Action Type	<b>Community flood alert</b>	
Action Delivery Lead	Clackmannanshire Council/ Scottish Flood Forum	Indicative Delivery 2022-28
Description	Community river level alerting system on the Menstrie Burn should continue to be operated to provide a trigger for local responses to flooding.	
Funding	Funding will be secured via normal revenue budgets	
Coordination	Action delivery lead will be determined once the actions have been finalised. The action will be coordinated with Scottish Flood Forum, Clackmannanshire Council and the community.	
Action	The community river level alerting system should continue to be operated and maintained to provide information on high water levels which could potentially lead to localised flooding.	

Action ID	Menstrie	24808
Action Type	<b>Flood warning maintenance</b>	
Action Delivery Lead	SEPA	Indicative Delivery Ongoing
Description	SEPA should maintain the River Devon flood warning scheme.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Clackmannanshire Council on the potential to use information from the flood studies and scheme to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required	

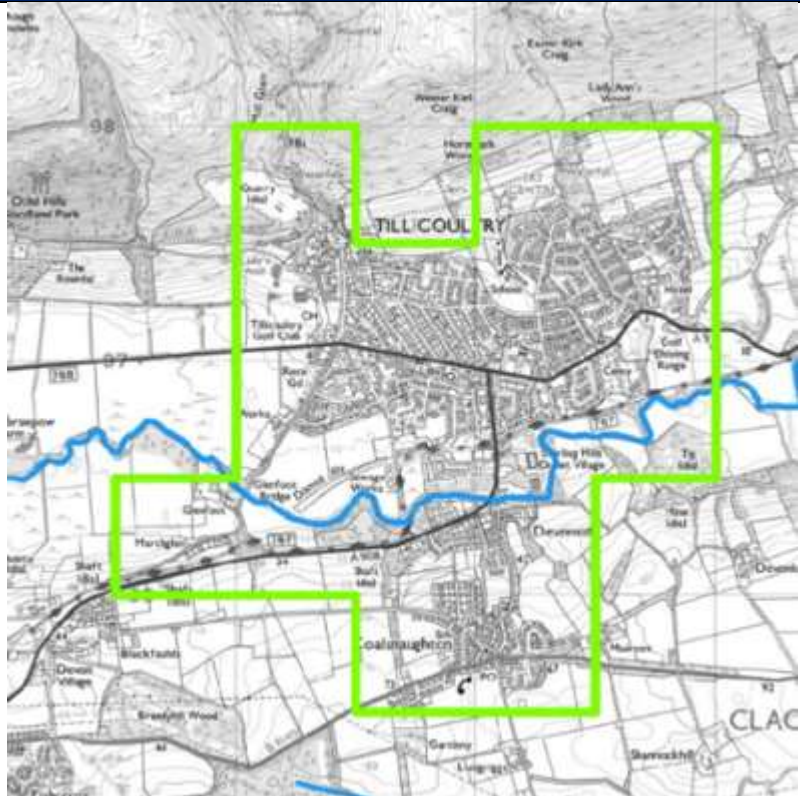
## Local Flood Risk Management plan datasheet

### 2.4.5.4 Tillicoultry OTA 260

#### Summary

Tillicoultry is a town located within the Clackmannanshire Council area. The main source of flooding in Tillicoultry is surface water, however there is also risk of river flooding from the River Devon and the Tillicoultry Burn. The local authority carried out a flood study for the River Devon and Tillicoultry Burn which showed that there are 202 homes and businesses at risk of river flooding. A surface water management plan identified a further 285 homes and businesses at risk of surface water flooding.

#### Location Map



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#### 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 a flood study completed in 2018. Understanding of surface water flooding is improved by a strategic surface water management plan completed in 2018 and a sewer flood risk assessment. There is a long history of flooding in the area from the River Devon and the Tillicoultry Burn. A recent flood occurred in August 2020 from the Tillicoultry Burn, flooding the Lower Mill Street and Hareburn Road area. Sewer and surface water flooding also occurred in the Westbourne Avenue area in December 2020 and also during August and September 2022.

Objective	ID	Description
Avoid flood risk	2601	Avoid inappropriate development that increases flood risk in Tillicoultry
Avoid flood risk	2602	Avoid an increase in flood risk by the appropriate management and maintenance of the existing formal defences along the River Devon
Prepare for flooding	2603	Prepare for current flood risk and future flooding as a result of climate change in Tillicoultry
Reduce flood risk	2604	Reduce the risk of surface water flooding and flooding from the River Devon and Tillicoultry Burn to Tillicoultry and the A908 Moss Road

Action ID	Tillicoultry 26001		
Action Type	<b>Flood scheme or works design</b>		
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery	2022-28
Description	<p>The Tillicoultry Flood Study completed in 2018 presented several options, with a recommendation to protect Tillicoultry from both the River Devon and Tillicoultry Burn as a single holistic scheme. The preferred option would consist of direct defences, wall raising and removal of bridges and other crossings on the Tillicoultry Burn. The outline design and detailed design for the Tillicoultry Flood Protection Scheme should be progressed. Further analysis of natural flood management, review of emergency plans, and consideration of further development of flood warning is also recommended. 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. Clackmannanshire Council proposes this action as the best viable option for managing fluvial flood risk in Tillicoultry. The delivery of this action is subject to funding being made available.</p>		
Funding	All works and progress on works subject to funding.		
Coordination	<p>Action delivery lead is Clackmannanshire Council in coordination with SEPA.</p> <p>SEPA will work with the local authority on the potential to coordinate this action with flood warning actions.</p>		
Action	<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>		

Action ID	Tillicoultry 26002		
Action Type	<b>Flood scheme or works implementation</b>		
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery	2022-2028
Description	<p>The responsible authority proposes this action as the best option for managing flood risk in this community. The delivery of this action is subject to funding being made available.</p> <p>Clackmannanshire Council should progress the scheme based on the detailed design. As built drawings should be made available to SEPA, for consideration in the Scottish Flood Defence Asset Database, flood map updates and flood warning scheme updates.</p>		
Funding	All works and progress on works subject to funding.		
Coordination	<p>Action delivery lead is Clackmannanshire Council and coordination will be required with SEPA.</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	The flood scheme/works is to be built following agreement of the design, costs and timescales.		

Action ID	Tillicoultry		26003
Action Type	<b>Sewer flood risk assessment</b>		
Action Delivery Lead	Scottish Water	Indicative Delivery	2023-25
Description	<p>Scottish Water will undertake a modelling assessment in the Tillicoultry sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009</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>		
Action	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		



Action ID	Tillicoultry	26004
Action Type	<b>Surface water management plan</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-2028
Description	Clackmannanshire Council published a strategic surface water management plan in December 2018. 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.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with Scottish Water.	
Action	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.	

Action ID	Tillicoultry	26005
Action Type	<b>Flood study (options appraisal)</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	In central Tillicoultry, the strategic surface water management plan recommended that a detailed surface water study should be carried out. This would further improve understanding of surface water flood risk and sewer performance, and assess potential options for flood risk management.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with Scottish Water.	
Action	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.	

Action ID	Tillicoultry	26006
Action Type	<b>Community engagement</b>	
Action Delivery Lead	Clackmannshire Council	Indicative Delivery 2022-28
Description	Community engagement should be carried out in partnership with local flood group (Tideco), Scottish Flood Forum and The Conservation Volunteers to support the detailed studies and a surface water management plan.	
Funding	Funding will be secured via normal revenue budgets.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with the Scottish Flood Forum and The Conservation Volunteers.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Tillicoultry	26007
Action Type	<b>Community resilience group</b>	
Action Delivery Lead	Community Group	Indicative Delivery 2022-28
Description	Tideco is an active flood group in Tillicoultry. The group should continue its activities and liaison with the community in partnership with Clackmannanshire Council and where necessary other responsible authorities. Work has already begun on promoting property flood resilience via use of community flood pods installed by Clackmannanshire Council in conjunction with Tideco and the Scottish Flood Forum.	
Funding	Funding will be secured via normal revenue budgets.	
Coordination	Action delivery lead is the community and coordination will be required with Clackmannanshire Council.	
Action	The group of community volunteers work to prepare and put in practice their Community Resilience Plan and be supported by the local authority.	

Action ID	Tillicoultry	26008
Action Type	<b>Flood defence maintenance</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-2028
Description	Clackmannanshire Council should continue to maintain the flood defences on the River Devon at Elistoun Drive. These flood defences will be considered as part of the Tillicoultry flood scheme design.	
Funding	Funding will be secured via normal revenue budgets.	
Coordination	Action delivery lead is Clackmannanshire Council and coordination will be determined once the actions have been finalised.	
Action	The existing flood defences are to be maintained by the asset owner to ensure they are in good condition.	

Action ID	Tillicoultry	26009
Action Type	<b>Flood warning maintenance</b>	
Action Delivery Lead	SEPA	Indicative Delivery Ongoing
Description	SEPA should maintain the River Devon flood warning scheme.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement. Clackmannanshire Council works and progress on works subject to funding.	
Coordination	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will work with Clackmannanshire Council on the potential to use information from the flood studies and scheme to inform ongoing flood warning. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

#### **2.4.6 02/09/06 (Alloa)**

This area is designated as a potentially vulnerable area due to the flood risk to Alloa from the Brothie Burn and to Sauchie from surface water. The Brothie Burn culvert plays an important role in flood risk management. There is a history of surface water flooding in this area including flooding to properties.

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*

Alloa (target area 186)

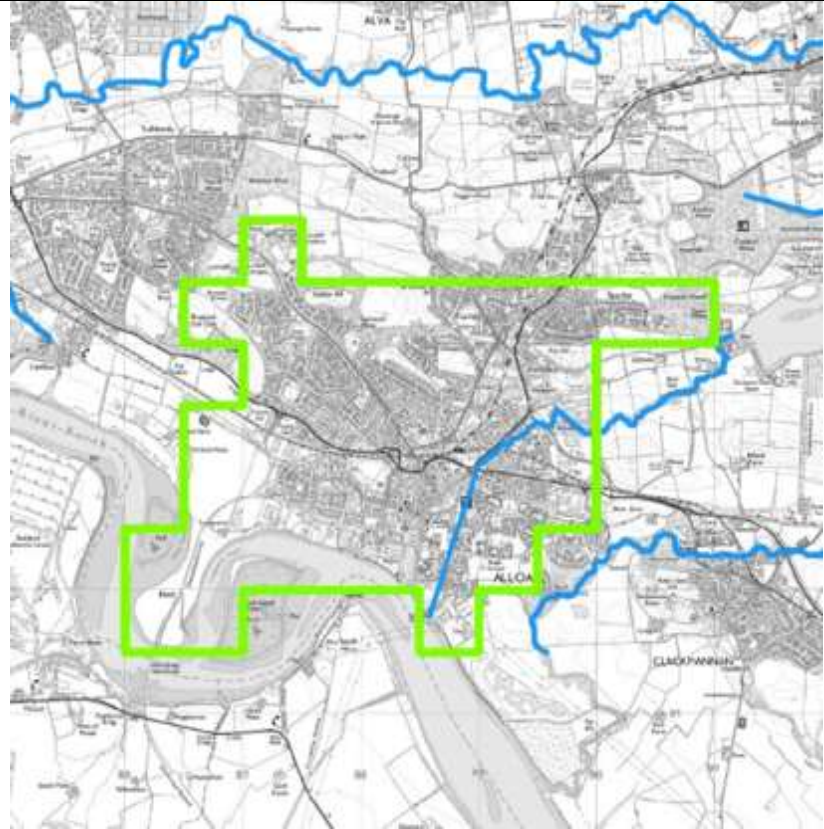
## Local Flood Risk Management plan datasheet

### 2.4.6.1 Alloa 186

#### Summary

The towns of Alloa and Sauchie are located on the northern bank of the River Forth within the Clackmannanshire Council area. The main source of flooding in Sauchie is surface water. Flood risk in Alloa from the Brothie Burn is due to the culverted section of the Brothie Burn plays an important role in flood risk management in Alloa.

#### Location Map



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#### 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 Brothie Burn is improved by a SEPA-led flood mapping study completed in 2020. The national level assessment is improved for surface water flooding by a strategic surface water management plan published in 2018 and a sewer flood risk assessment. There is a notable record of surface water flooding in the area including recent flooding in February and August 2020.

Objective	ID	Description
Avoid flood risk	1861	Avoid inappropriate development that increases flood risk in Alloa.
Avoid flood risk	1862	Avoid an increase in flood risk by the appropriate management and maintenance of the Brothie Burn culvert
Improve data and understanding	1863	Improve data and understanding of river flooding from the Brothie Burn and surface water flooding in Alloa
Reduce flood risk	1864	Reduce the risk of surface water flooding in this area

Action ID	Alloa	18601
Action Type	<b>Flood Study</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	The Brothie Burn culvert plays an important role in flood risk management in Alloa. A cycle 1 study led by SEPA identified the need for a more detailed investigation of the Brothie Burn culvert. The condition of the culvert is unknown and requires further investigation to assess the structure and understand potential flood risk and management options.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with SEPA.	
Action	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.	

Action ID	Alloa	18602
Action Type	<b>Flood study (options appraisal)</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	A strategic surface water management plan assessed and analysed surface water flooding hotspots, identifying locations where further detailed studies were required. In Alloa it was recommended that a more detailed surface water study should be carried out to further improve understanding of surface water flood risk and assess potential options for the management of flood risk in 2 locations. These include Sauchie including Fairfield and Inglewood in Alloa. This work should be carried out in conjunction with the Brothie Burn culvert study. Close partnership working with Scottish Water will be required.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with Scottish Water.	
Action	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.	

Action ID	Alloa	18603
Action Type	<b>Sewer flood risk assessment</b>	
Action Delivery Lead	Scottish Water	Indicative Delivery 2023-25
Description	Scottish Water will undertake a modelling assessment in the Alloa sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009	
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	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	



Action ID	Alloa	18604
Action Type	<b>Surface water management plan</b>	
Action Delivery Lead	Clackmannanshire Council	Indicative Delivery 2022-28
Description	Clackmannanshire Council published a strategic surface water management plan in December 2018. 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.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Clackmannanshire Council in coordination with Scottish Water.	
Action	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.	

Action ID	Alloa	18605
Action Type	<b>Flood warning maintenance</b>	
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	The action delivery lead is SEPA and coordination will be determined once the actions have been finalised. SEPA will maintain the Forth 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	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

### 2.4.7 02/09/07 (South Alloa)

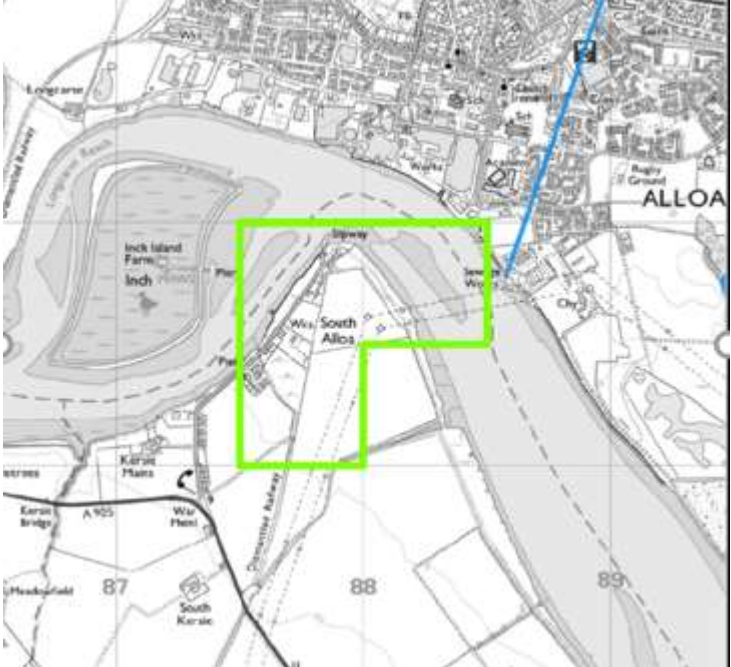
This area is designated as a potentially vulnerable area due to estuarine flood risk to South Alloa consisting of a combination of coastal and river flooding from the Firth of Forth. Several floods from coastal and surface water sources have been recorded in this area.

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

South Alloa (target area 177)

<b>Local Flood Risk Management plan datasheet</b>
2.4.7.1 South Alloa 177

Summary	Location Map
<p>The small village of South Alloa is situated on the south bank of the River Forth within the Falkirk Council area. The main source of flooding in South Alloa is estuarine flood risk consisting of a combination of coastal and river flooding from the Firth of Forth. There are approximately 40 people and 20 homes and businesses currently at risk from flooding, which is a significant proportion of the community. This is likely to increase to 60 people and 30 homes and businesses by the 2080s due to climate change.</p>	 <p>© Crown copyright and database rights 2022 Ordnance Survey 100020780 (Stirling Council). You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.</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. Several floods from coastal and surface water sources have been recorded in this area.

Objective	ID	Description
Avoid flood risk	1771	Avoid inappropriate development that increases flood risk in South Alloa.
Prepare for flooding	1772	Prepare for current flood risk and future flooding as a result of climate change in South Alloa

Action ID	South Alloa	17701
Action Type	<b>Community engagement</b>	
Action Delivery Lead	Falkirk Council	Indicative Delivery 2022-28
Description	Community engagement opportunities will be sought where possible with the community organisations of South Alloa regarding improving community resilience.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Falkirk Council in coordination with the Scottish Flood Forum.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	South Alloa	17702
Action Type	<b>Flood warning maintenance</b>	
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	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. 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	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

### 2.4.8 02/09/08 (Stirling)

This area is designated as a potentially vulnerable area due to flood risk to Stirling and Bannockburn. There is flood risk to Stirling from river and surface water and Bannockburn from surface water. There is a history of flooding in this area, with recent flooding being caused by 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

Bannockburn	(target area 195)
Stirling	(target area 258)

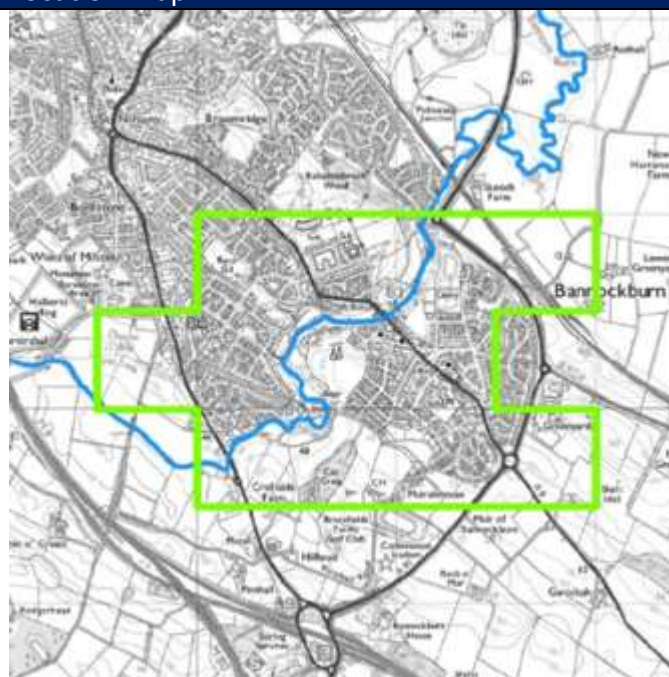
## Local Flood Risk Management plan datasheet

### 2.4.8.1 Bannockburn 195

#### Summary

Bannockburn lies immediately south of Stirling, within the Stirling Council area. The main source of flooding is surface water. There are approximately 130 people and 80 homes and businesses currently at risk of flooding. This is likely to increase to 200 people and 120 homes and businesses by the 2080s due to climate change.

#### Location Map



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#### 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 an integrated catchment study and a sewer flood risk assessment led by Scottish Water. There is a history of flooding in this area including records of travel disruption to A9.

Objective	ID	Description
Avoid flood risk	1951	Avoid inappropriate development that increases flood risk in Bannockburn
Prepare for flooding	1952	Prepare for current flood risk and future flooding as a result of climate change in Bannockburn
Reduce flood risk	1953	Reduce the risk of surface water flooding in Bannockburn.

Action ID	Bannockburn	19501
Action Type	<b>Sewer flood risk assessment</b>	
Action Delivery Lead	Scottish Water,	Indicative Delivery 2025-2027
Description	Scottish Water will undertake a modelling assessment in the Stirling sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009	
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. Outputs of this modelling assessment will be shared with local authorities and SEPA	
Action	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	

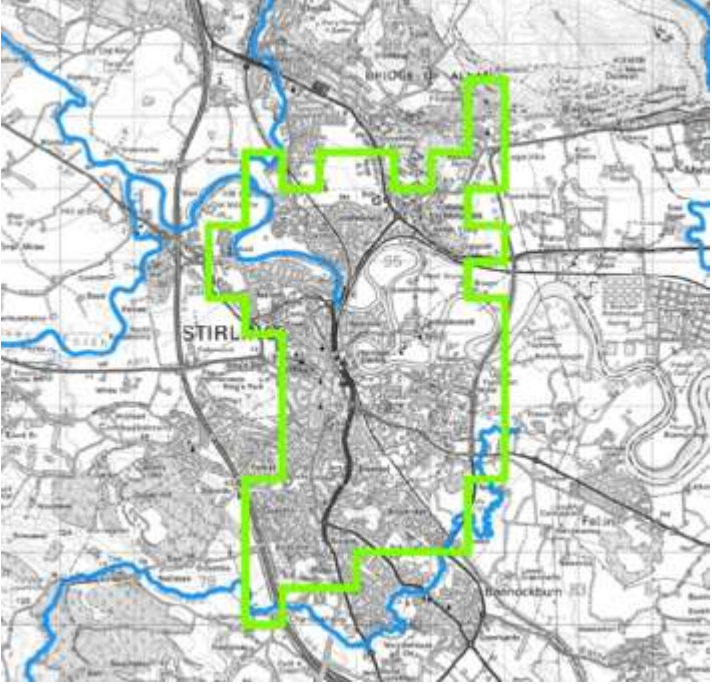
Action ID	Bannockburn	19502
Action Type	<b>Surface water management plan</b>	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Stirling Council should develop a surface water management plan for Bannockburn as planned. The plan should incorporate the results of the sewer flood risk assessment and integrated catchment study and include the high level assessment of actions. The impacts of climate change on future flood risk will be assessed.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordinated with Scottish Water and other actions in the area.	
Action	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.	



Action ID	Bannockburn	19503
Action Type	<b>Community engagement</b>	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Awareness raising should be carried out based on the findings of the surface water management plan. Stirling Council will engage Bannockburn community to gather local information and continue engagement throughout and beyond the process.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

**Local Flood Risk Management plan datasheet**

**2.4.8.2 Stirling 258**

Summary	Location Map
<p>Stirling is a city it is located on the River Forth in the Stirling Council area. The main sources of flooding in Stirling are surface water and river flooding, however there is also a risk of estuarine flooding. There are approximately 5,000 people and 2,500 homes and businesses currently at risk of flooding. This is estimated to increase to 8,100 people and 4,200 homes and businesses by the 2080s due to climate change.</p>	 <p>© Crown copyright and database rights 2022 Ordnance Survey 100020780 (Stirling Council). You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.</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 carried out by the local authority in support of the Stirling Flood Protection Scheme. Understanding of surface water flooding is improved by an integrated catchment study, a surface water management plan and a sewer flood risk assessment carried out by the local authority and Scottish Water. There is a long history of flooding in Stirling with frequent records of flooding caused by river, coastal and surface water flooding. Notable floods occurred in December 2006, June 2019 and February 2020 when flooding from the river and surface water affected homes, businesses and roads.

Objective	ID	Description
Avoid flood risk	2581	Avoid inappropriate development that increases flood risk in Stirling
Avoid flood risk	2582	Avoid an increase in flood risk by the appropriate management and maintenance of Stirling flood protection scheme
Prepare for flooding	2583	Prepare for current flood risk and future flooding as a result of climate change in Stirling
Reduce flood risk	2584	Reduce the risk of river flooding from the River Forth in Stirling
Reduce flood risk	2585	Reduce the risk of surface water flooding in Stirling

Action ID	Stirling		25801
Action Type	<b>Flood scheme or works design</b>		
Action Delivery Lead	Stirling Council	Indicative Delivery	2022-28
Description	Development of the Stirling Flood Protection Scheme should continue into detailed design as planned, subject to favourable option assessment.		
Funding	All works and progress on works subject to funding.		
Coordination	Action delivery lead is Stirling 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.		
Action	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.		

Action ID	Stirling	25802
Action Type	<b>Flood scheme or works implementation</b>	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-28
Description	The Stirling Flood Protection Scheme design is currently paused due to a lack of funding. If funding becomes available and provided, the designed scheme is feasible and acceptable to stakeholders construction of the scheme will commence.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling 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 an update to SFDAD.	
Action	The flood scheme/works is to be built following agreement of the design, costs and timescales.	

Action ID	Stirling	25803
Action Type	<b>Sewer flood risk assessment</b>	
Action Delivery Lead	Scottish Water,	Indicative Delivery 2024-2026
Description	Scottish Water will undertake a modelling assessment in the Stirling sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009	
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. Outputs of this modelling assessment will be shared with local authorities and SEPA	
Action	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	

Action ID	Stirling	25804
Action Type	Surface water management plan	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	A surface water management plan for Stirling should be drawn up following the outcomes of the integrated catchments study. The plan is to address more local surface water flooding issues which have recently increased in frequency and magnitude.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council in coordination with Scottish Water and other actions in the area.	
Action	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.	

Action ID	Stirling	25805
Action Type	Community engagement	
Action Delivery Lead	Stirling Council	Indicative Delivery 2022-2028
Description	Community engagement and awareness raising should be carried out to cover the development of flood protection scheme and surface water management plan. This aims to ensure that the scheme is carried out in conjunction with community engagement where issues, constraints, aspirations and opportunities are identified.	
Funding	All works and progress on works subject to funding.	
Coordination	Action delivery lead is Stirling Council and coordination will be determined once the actions have been finalised.	
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	

Action ID	Stirling	25806
Action Type	Flood warning maintenance	
Action Delivery Lead	SEPA	Indicative Delivery First half of cycle
Description	SEPA should maintain the Stirling flood warning scheme. The scheme should be investigated for improvement and/or recalibration as part of the Upper Forth project.	
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	
Coordination	The action delivery lead is SEPA. SEPA will work with Stirling Council on the potential to coordinate flood warning improvements with the flood study investigation and flood scheme works. SEPA will continue to raise awareness of flood warning, and engage with communities about the service when required.	
Action	The Floodline flood warning service is to be kept operational through maintenance to the existing system and updates being undertaken as required.	

Action ID	Stirling	25807
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. SEPA 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	Action delivery lead is SEPA and coordination will be determined once the actions have been finalised. 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	SEPA will continue to update flood maps based on new information.	

### 3 Next Steps and Monitoring Progress

This Plan will run for six years from 2022. Over this period, the Forth Local Plan District 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), Stirling Council, as lead local authority 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), Stirling Council, as lead local authority, 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.

Stirling Council will make these reports available for public inspection.

## 4 Annexes

Please refer to [SEPA FRM Annexes](#) for a full list of Annexes for the overall FRM Plans

#### 4,1 Contact Details for Local Authorities and Responsible Authorities

Clackmannanshire Council	01259 450000	<a href="mailto:customerservice@clacks.gov.uk">customerservice@clacks.gov.uk</a>	Kilncraigs Kilncraigs, Greenside Street, Alloa, FK10 1EB
Stirling Council	01786 404040	<a href="http://my.stirling.gov.uk/contact">http://my.stirling.gov.uk/contact (online form)</a>	Customer First 5 Port Street, Stirling, FK8 2EJ
Falkirk Council	01324 506070	<a href="mailto:contact.centre@falkirk.gov.uk">contact.centre@falkirk.gov.uk</a>	
Perth & Kinross	01738 475000	<a href="mailto:Flood@pkc.gov.uk">Flood@pkc.gov.uk</a>	Pullar House 35 Kinnoull Street Perth PH1 5GD
Fife Council	03451 550000	<a href="mailto:fife.council@fife.gov.uk">fife.council@fife.gov.uk</a>	Fife Council Fife House, North Street, Glenrothes, KY7 5LT
Scottish Water	0800 0778 778	<a href="https://www.scottishwater.co.uk/Help-and-Resources/Contact-Us/Contacting-Us">https://www.scottishwater.co.uk/Help-and-Resources/Contact-Us/Contacting-Us</a>	
SEPA	03000 99 66 99	<a href="mailto:frmplanning@sepa.org">frmplanning@sepa.org</a>	Angus Smith Building, 6 Parklands Avenue, Eurocentral, Holytown, Motherwell, ML1 4WQ
LLTNPA	01389 722600	<a href="mailto:info@lochlomond-trossachs.org">info@lochlomond-trossachs.org</a>	Carrochan Carrochan Road Balloch G83 8EG
Scottish Forestry	0131 3705000	<a href="https://forestry.gov.scot/contact">https://forestry.gov.scot/contact</a>	Silvan House Corstorphine Road Edinburgh EH12 7AT



## 4.2 Links to Schedules of Clearance and Repair

### S18 Schedule of Clearance and Repair

The following are links for each local authority to access schedules of clearance and repair under Section 18 of the Flood Risk Management (Scotland) Act 2009:

Local Authority	Method of public access to the S18 Schedule	Location, hyperlink or web access
Stirling Council	On request	Endrick House, Kerse Road, Stirling. FK7 7SZ Contact Centre: 01786 404040
Falkirk Council	Website	<a href="mailto:contact.centre@falkirk.gov.uk">contact.centre@falkirk.gov.uk</a>  <a href="tel:01324506070">01324 506070</a>
Clackmannanshire Council	Website	<a href="http://www.jbamap.co.uk/ClacksAssetRegister/Asset/Index">http://www.jbamap.co.uk/ClacksAssetRegister/Asset/Index</a>
Perth and Kinross Council	Website	Via link at: <a href="http://www.pkc.gov.uk/article/14718/Flooding-duties-and-responsibilities">www.pkc.gov.uk/article/14718/Flooding-duties-and-responsibilities</a>
Fife Council	Available on request at:	Fife House, North Street, Glenrothes, KY7 5LT Contact Centre: 03451 550000

### 4.3 List of Acronyms

FS	Forestry Scotland
FLS	Forestry and Land Scotland
FEH	Flood Estimation Handbook
FEP	Flood Emergency Plan
FRM	Flood Risk Management
FPS	Flood Protection Scheme
GIS	Geographical Information System
ICS	Integrated Catchment Study
LFRMP	Local Flood Risk Management Plan
LPD	Local Plan District
PFR	Property Flood Resilience
MCA	Multi Criteria Analysis
NFM	Natural Flood Management
NPF4	National Planning Framework 4
PVA	Potentially Vulnerable Area
Q&S	Quality & Standards (Scottish Water)
RAG	Red, Amber, Green
SEA	Strategic Environmental Assessment
SEPA	Scottish Environment Protection Agency
SFF	Scottish Flood Forum
SFFS	Scottish Flood Forecasting Service
SFRS	Scottish Fire and Rescue Service
SOP	Standard of Protection
SPP	Scottish Planning Policy
SR10/15	Spending Review periods for 2010-2015 and 2016-2021 for Scottish Water capital maintenance expenditure
SUDS	Sustainable Urban Drainage System
SWMP	Surface Water Management Plan
TEAMB	Forth Estuary and Montrose Basin
TCV	The Conservation Volunteers

## 4.4 FRM Responsibilities & Legal Requirement for this Final Report

### Flood Risk Management in Scotland

The Scottish Ministers, SEPA and responsible authorities must exercise their flood risk related functions with a view to reducing overall flood risk (refer to Section 1(1) of the Flood Risk Management (Scotland) Act 2009).

Through the preparation of a national flood risk assessment and setting of objectives to reduce the level of flood risk by SEPA, which is published in Flood Risk Management Strategy, and the publication of Local Flood Risk Management Plan's by 'lead' local authorities, which detail how and when the actions agreed to meet these objectives are to be done, SEPA and all responsible authorities must act to manage flood risk in a sustainable way.

### Flood Risk Management Plan for the Forth Local Plan District

### Local Flood Risk Management Plan for the Forth Local Plan District

### Legal Requirement

This document sets out the conclusions of the review of the Local Flood Risk Management Plan (LFRMP) for the Forth Local Plan District (LPD) as required by Section 37 of the Flood Risk Management (Scotland) Act 2009 (the "Act").

### **38 Local flood risk management plans: final report**

(1) Not earlier than 5 years, and not later than 6 years, after a local flood risk management plan is finalised, or by such other date as the Scottish Ministers may direct, the lead authority must publish a report on the plan containing —

- (a) an assessment of the progress made towards implementing the current measures,
- (b) a summary of the current measures which were not implemented, with reasons for their non-implementation, and
- (c) a description of any other measures implemented since the plan was finalised which the lead authority considers have contributed to the achievement of the objectives summarised in the supplementary part of the plan.

(2) The lead authority must make copies of the report available for public inspection.

The Forth Local Flood Risk Management Plan, which includes the 'implementation part of the Plan', was published in June 2016. An Interim Report on the progress made on this Plan was published in March 2019. This Final Report was therefore to be published between December 2021 and June 2022. However, the Scottish

Minister's subsequently directed that the Final Report be published by 31 December 2022.

The Final Report provides a summary of the Forth Local Flood Risk Management Plan actions ('measures') and the proposed delivery timescales.

The information on progress includes:

- an assessment of the progress made towards implementing each of the actions;
- reasons for any actions where delivery is not as planned; and
- a summary of the actions which have not been implemented, with reasons why they were not implemented; and
- a description of arrangements planned to deliver the remaining actions and to address delayed actions; and
- a description of any other actions implemented since the Plan was finalised, which the lead authority considers have contributed to the achievement of the objectives summarised in the Plan.

The Final Report is published by the 'lead authority' as defined by Section 34(9) of the Act in partnership with SEPA and the 'responsible authorities', as defined by Section 5 of the Act. The approval of the Final Report will be in accordance with the agreed governance arrangements for the Local Plan District Partnership. The responsible authorities for the Forth LPD Partnership are:

- Stirling Council (lead authority)
- Falkirk Council
- Clackmannanshire Council
- Perth and Kinross Council
- Fife Council
- SEPA
- Scottish Water
- Loch Lomond and the Trossachs National Park
- Scottish Forestry

### **Publication**

The published Final Report for the Forth LFRMP will be made available for public inspection, as per Section 37(2) of the Act, via the website of the lead authority, Stirling Council:

<https://www.stirling.gov.uk/frmplans>

Links to the published Final Report for the Forth Local Flood Risk Management Plan will also be provided from Scottish Government, SEPA and other responsible authority websites.

A hard (paper) copy is available on request of the published Report for the Forth LFRMP is also available for public inspection at the following location(s):

- Stirling Council, Endrick House, Kerse Road, Strling FK7 7SZ
- Clackmannanshire council, Kilncraigs, Greenside Street, Alloa, FK10 1EB
- Perth and Kinross Council, Pullar House, 35 Kinnoull Street, Perth, PH1 5GD
- Perth and Kinross Council Auchterarder Library, Chapel Wynd, Auchterarder PH3 1BL

(1) during the hours of 9:00 a.m. to 5.00 p.m., Mondays to Fridays inclusive

Copies of the published Final Report for the Forth Local Flood Risk Management Plan may also be available at offices of other responsible authorities. Those persons living in the Perth and Kinross, Falkirk and Clackmannanshire Council areas of the Forth District should contact their own local authority in the first instance:

Stirling Council General Enquiries	01786 404 040
Falkirk Council General Enquiries	01324 506070
Clackmannanshire Council General Enquiries	01259 450000
Perth and Kinross General Enquiries	01738 475000
Fife Council General Enquiries	03451 550000

## 4.5 Acknowledgements

The Stirling Council gratefully acknowledges the cooperation and input that various parties have provided, including inter alia, the following organisations:

### **SEPA**

Stirling Council, Falkirk Council, Clackmannanshire Council, Perth and Kinross Council, Fife Council acknowledge the inclusion of text generated by SEPA in preparation of the Plan. Figures and Maps produced by SEPA for FRM-have been reproduced in the Forth Local Flood Risk Management Plan with authorisation from SEPA under SEPA Licence number 100016991 (2022).

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All contributors to the NFRA data, more information can be found <https://www.sepa.org.uk/data-visualisatio/nfra2018/>

### **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**

Stirling Council and Falkirk Council, Clackmannanshire Council, Perth and Kinross Council, Fife Council acknowledge the inclusion of surface water flooding data generated by Scottish Water in preparation of flood risk information.

## 4.6 Compliance

### Flood Risk Management (Scotland) Act 2009

#### Forth Local Plan District

#### Local Flood Risk Management Plan 2022-2028

#### Lead Local Authority Statement of Compliance with s34/ Schedule 1

### Introduction

Section 34 of the above Act sets out that the lead local authority shall prepare the Local Flood Risk Management Plan and describes the requirements. It places duties upon lead local authorities, other responsible authorities and SEPA to agree to these plans, and in agreeing to these plans they must agree not only their actions contained in the plans, but that the plans comply with s34.

The following table is provided by Stirling Council to assist each responsible authority with providing their agreement to the Plan.

<b>Section 34</b>	
S34(1)	(1) The lead authority for each local plan district must prepare a local flood risk management plan to supplement the relevant flood risk management plan.
Stirling Council, as Lead Local Authority for the Forth LPD, has prepared a LFRMP, in partnership with Clackmannanshire Council, Perth and Kinross Council, Fife Council, Falkirk Council, SEPA and Loch Lomond and the Trossachs National Park.	
S34(2a & 2b)	(2) A local flood risk management plan is to consist of— (a) a supplementary part, and (b) an implementation part.
The Plan does not identify the supplemental and implementation part separately, but both are integral to the Plan and annexes.	
S34(3a)	(3) The supplementary part must include— (a) a summary of the objectives, measures and other information included in the relevant flood risk management plan under paragraphs 1 to 3 of schedule 1 so far as relevant to the local plan district,
The Plan includes (within Chapters 2 & 3) a summary and description of the objectives (for the LPD and PVA's); the actions) and 'other information' (where relevant) to paras 1 to 3 of Schedule 1	
S34(3bi, ii & iii)	(3) The supplementary part must include— (b) such information supplemental to that plan including such— (i) maps,



	<ul style="list-style-type: none"> <li>(ii) information about how implementing the measures summarised under paragraph (a) may alter (including enhance) or restore natural features and characteristics, and</li> <li>(iii) further information about those measures, as the lead authority considers relevant to flood risk management within the local plan district, and</li> </ul>
<p>The Plan includes (within Chapters 2 &amp; 3) maps for each PVA and other information on how natural features will contribute to the management of flood risk. It also includes any 'further information' the lead authority considers relevant to flood risk management within the LPD.</p>	
S34(3ci)	<ul style="list-style-type: none"> <li>(3) The supplementary part must include—</li> <li>(c) a summary of— <ul style="list-style-type: none"> <li>(i) the steps taken under subsections (1) to (6) of section 35 in relation to the local flood risk management plan,</li> </ul> </li> </ul>
<p>The Plan includes (within Annex 2) a summary of the steps (1 to 6) of S35, describing the public consultation of the Local Flood Risk Management Plan for the LPD.</p>	
S34(3cii&3cii i)	<ul style="list-style-type: none"> <li>(3) The supplementary part must include—</li> <li>(c) a summary of— <ul style="list-style-type: none"> <li>(ii) any other consultation measures taken in connection with the preparation of the plan, and</li> <li>(iii) changes made to the plan in light of the views and representations received on it.</li> </ul> </li> </ul>
<p>The Plan includes (within Annex 2) details of the non-statutory consultation activities carried out by the local authorities in the preparation of the Plan and that no changes were made to it in light of the views and representations received.</p>	
S34(4ai & 4a ii)	<ul style="list-style-type: none"> <li>(4) The implementation part must include a description of how the current measures are be implemented including— <ul style="list-style-type: none"> <li>(a) a detailed timetable for— <ul style="list-style-type: none"> <li>(i) the completion of measures currently being implemented, and</li> <li>(ii) the implementation of measures yet to be commenced,</li> </ul> </li> </ul> </li> </ul>
<p>The Plan includes (within Chapter 3) a timetable of when measures (Actions) are to be implemented within each PVA sub-section.</p>	
S34(4bi & 4b ii)	<ul style="list-style-type: none"> <li>(4) The implementation part must include a description of how the current measures are be implemented including— <ul style="list-style-type: none"> <li>(b) in relation to each measure, a description of— <ul style="list-style-type: none"> <li>(i) who is, or is to be, responsible for implementing the measure, and</li> <li>(ii) the arrangements for funding the measure,</li> </ul> </li> </ul> </li> </ul>
<p>The Plan includes (within chapter 3) a description of who the lead Responsible Authority is for implementing each of the measures (Actions) and arrangements for funding.</p>	
S34(4ci & 4cii) & 4d	<ul style="list-style-type: none"> <li>(4) The implementation part must include a description of how the current measures are be implemented including—</li> </ul>

	<p>(c) a description of how the functions of the persons identified under paragraph (b) will be coordinated to implement the measures and, in particular, a description how those functions will be coordinated insofar as the measures relate to—</p> <ul style="list-style-type: none"> <li>(i) the alteration (including enhancement) or restoration of natural features and characteristics, and</li> <li>(ii) surface run-off water or urban drainage, and</li> </ul> <p>(d) such other information as the lead authority considers relevant to the implementation of the measures.</p>
<p>The Plan includes (within Chapter 3) a description of how the functions of those identified under S34b will be co-ordinated (detailed for individual Actions to implement the measures (Actions), and specifically, any that may relate to natural features and surface water run off or urban drainage, and other information the lead authority considers relevant to the implementation of the proposed measure (Action).</p>	
S34(5)	<p>(5) The implementation part may also include a description of how other measures summarised in the supplementary part under subsection (3)(a) are to be implemented.</p>
<p>The Plan contains no 'other measures' for implementation.</p>	
S34(6)	<p>(6) A local flood risk management plan must also include such other matters as the Scottish Ministers may specify by regulations.</p>
<p>Scottish Ministers have made no further specifications by regulation for inclusion in the Plan.</p>	
S34(7)	<p>(7) Before making regulations under subsection (6), the Scottish Ministers must consult</p> <ul style="list-style-type: none"> <li>(a) SEPA,</li> <li>(b) every responsible authority, and</li> <li>(c) such other persons as they consider appropriate.</li> </ul>
<p>See S34(6).</p>	
S34(8)	<p>(8) A local flood risk management plan must not be inconsistent with anything in the relevant flood risk management plan.</p>
<p>The Plan has been developed from, and is consistent with, the Flood Risk Management Strategy for the Forth Local Plan District.</p>	
S34(9-11)	
<p>These clauses are descriptive and have no requirements to be satisfied.</p>	

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### Formats

If you need help or this information  
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