Flood Risk Management (Scotland) Act 2009:

Shetland

Local Plan District

Local Flood Risk Management Plan – Cycle 2

Published by: Shetland Islands Council 2022

Delivering sustainable flood risk management is important for Scotland's continued economic success and well-being. It is essential that we avoid and reduce the risk of flooding, and prepare and protect ourselves and our communities.

This is the second local flood risk management plan for the Shetland Local Plan District, describing the actions which will make a real difference to managing the risk of flooding and recovering from any future flood events.

The task now for us – Shetland Islands Council, Scottish Water, the Scottish Environment Protection Agency (SEPA), the Scottish Government and all other Responsible Authorities and public bodies – is to turn our plan into action.

Shetland Islands Council

SEPA Scottish Environment Protection Agency Buidheann Dìon Àrainneachd na h-Alba

Scottish Water Trusted to serve Scotland

Foreword

The impacts of flooding experienced by individuals, communities and businesses can be devastating and long lasting. It is vital that we continue to reduce the risk of any such future events and improve Scotland's ability to manage and recover from any events which do occur.

The publication of this Plan is an important milestone in the continued implementation of the Flood Risk Management (Scotland) Act 2009 and in improving how we cope with and manage floods in the Shetland Local Plan District. The Plan translates this legislation into actions to reduce the damage and distress caused by flooding over the second flood risk planning cycle, running from 2022 to 2028.

The Plan has been developed by the Shetland Local Plan District Partnership, which is comprised of the Shetland Islands Council, Scottish Water and SEPA. The partnership is led by the Shetland Islands Council, who have published this Plan.

This Plan presents actions to avoid and reduce the risk of flooding, and prepare and protect ourselves and our communities within the Potentially Vulnerable Areas and across the Local Plan District. These actions include works to reduce flood risk in 2 locations, flood protection studies to assess future possible works as well as Surface Water Management Plans and awareness raising. The delivery of many of these actions may be dependent on the availability of funding, however, we can all play our part in managing flood risk as we are able.

Individuals are the first line of defence against flooding and have responsibilities to protect themselves from flooding. The publication of this Plan shows that the coordinated and collaborative efforts of public bodies can be brought together to deliver sustainable outcomes. However, the actions in this Plan can only be delivered with the support of all the public bodies, The Scottish Government, and most importantly you and your communities.

This Plan therefore provides the blueprint upon which the Council, SEPA and Scottish Water will deliver their flood risk management responsibilities and, in particular, ensures that all steps should be taken to manage flooding in a sustainable manner.

I would like to thank all those who contributed to the development of this Plan which will help shape the way in which floods and their impacts are managed across the Shetland Local Plan District.

Cllr Dennis Leask – Chair SIC Development Committee

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List of Acronyms and Abbreviations

CoSLA - Convention of Scottish Local Authorities

EIA - Environmental Impact Assessment

FPS - Flood Prevention Scheme / Flood Protection Scheme

FRA - Flood Risk Assessment

FRM Act - Flood Risk Management (Scotland) Act 2009

FRMP - Flood Risk Management Plans

FRM LAG - Flood Risk Management Local Advisory Group

HRA – Habitat Regulations Appraisal

LUP - Land Use Planning

LLA - Lead Local Authority

LFRMP - Local Flood Risk Management Plans

LNR - Local Nature Reserve

LPD - Local Plan District

LPDP - Local Plan District Partnerships

NFMAG - National Flood Management Advisory Group

NFRA - National Flood Risk Assessment

NFM - Natural Flood Management

NS – Nature Scot

PVA - Potentially Vulnerable Areas

PLP - Property Level Protection

RBMP - River Basin Management Planning

SAIFF - Scottish Advisory and Implementation Forum for Flooding

SMP - Shoreline Management Plan

SSSI - Site of Special Scientific Interest

SAC - Special Area of Conservation

SPA - Special Protection Areas

SoP - Standard of Protection

SEA - Strategic Environmental Assessment

SEPA – Scottish Environment Protection Agency

SEPF - Shetland Emergency Planning Forum

SFRA - Strategic Flood Risk Assessment

SIC – Shetland Islands Council

SWMP - Surface Water Management Plan

SuDS - Sustainable Drainage Systems

UKCP18 - UK Climate Change Projections

1: Flood Risk Management in the Shetland Local Plan District

1.1 The Shetland Local Flood Risk Management Plan

The Shetland Local Flood Risk Management Plan (the 'local Plan') has been developed to detail the actions adopted to reduce the devastating and costly impact of flooding in the Shetland Local Plan District. The Plan supplements the Shetland Flood Risk Management Plan published by SEPA in December 2021, which is one of a set of 14 plans that cover Scotland. That plan, described throughout as 'the national set of plans', coordinates the efforts of all organisations that tackle flooding, whether it is in our towns, villages or rural areas and whether it is from rivers, the sea or from surface water. The national set of plans identifies where the risk of flooding and benefits of investment are greatest: the local Plan details the prioritised actions that will be delivered with this investment.

By publishing the local Plan, individuals and communities have the information to better manage their own responsibilities. Everyone can take action with the confidence of what others are doing and with the clear knowledge when they are doing it.

The local Plan details how and when the actions to deliver the goals set in the national set of plan are to be delivered in the second six-year planning cycle, from 2022 to 2028. The local Plan therefore describes the short-term direction of flood risk management in the Shetland Local Plan District, adding local detail to the information in the national set of plan. The actions in this local Plan are based on agreed objectives for tackling floods in highest risk areas. They rely on the best evidence available on the causes and consequences of flooding and make clear the practical ambition of Responsible Authorities, including the Shetland Islands Council, SEPA and Scottish Water.

It is through this risk-based and plan-led approach that flood management will improve for the individuals, communities and businesses at risk in the Shetland Local Plan District.

The local Plan is published by Shetland Islands Council, lead authority for the Shetland Local Plan District. The local Plan has been prepared in collaboration with SEPA and Scottish Water. The local Plan is a requirement under the Flood Risk Management (Scotland) Act 2009 and fulfils requirements within the European Union's Floods Directive.

1.2 How to read this plan

The Shetland Local Flood Risk Management Plan has three sections:

Part 1 contains background information on the approach taken in Scotland to manage flooding. It explains the duties and aims of relevant organisations, including how they work together and how flood risk management planning is linked to other government policies and initiatives. Most importantly it details how flood risk management planning is delivered to each Local Plan District through a Local Flood Risk Management Plan.

Part 2 is the most important section for those individuals and communities seeking to understand their flood risk and its management. For priority communities (called Potentially Vulnerable Areas) there is a short description of the causes and consequences of flooding. The agreed goals or objectives are clearly set out, and, most importantly, the actions that will deliver progress against these goals over the second six-year planning cycle from 2022 to 2028 are described, including when they will be implemented, which organisation is responsible, and how they are to be funded.

Annexes to the local Plan provide supporting documents and references, and present more detailed information in various formats. A glossary of terms is also available.

The local Plan should be read alongside the Shetland Flood Risk Management Plan published by SEPA in December 2021, which has been developed in parallel and provides additional background information and national context. The national level and the local level plans will both be updated every six years – see chapter 1.5 of the local Plan.

1.3 How we have developed the Local Plan?

Coordination, collaboration and partnership working

Many organisations and individuals are involved in helping to improve flood management in Scotland. A piecemeal approach to tackle flooding does not work. Flooding is too complex, and the causes and impacts too complicated for any single organisation to address alone. Flooding cuts across the responsibilities of organisations such as the Shetland Islands Council, SEPA, Scottish Water and emergency responders and flood management requires the coordination set out in this local Plan (and parallel national set of plan) to be successful. A willingness to collaborate by those responsible for flood management is essential.

The local Plan has been developed in partnership. Those organisations responsible are working more closely together than ever before. In local partnerships, here and throughout Scotland, SEPA has provided the technical analysis and ensured a consistent national approach is taken. It has provided the evidence upon which to make sensible, informed decisions. The Shetland Islands Council and Scottish Water have made sure that local knowledge and expertise has informed the decision-making.

The local Plan has been developed by:

- Shetland Islands Council (lead authority)
- Scottish Water
- SEPA

Roles and responsibilities for Flood Risk Management Planning

Individuals are the first line of defence against flooding and have responsibilities to protect themselves from flooding. Being prepared by knowing what to do and who to contact if flooding happens can help you reduce the damage and disruption flooding can have on your life.

However, the responsibility for planning flood risk management in the Shetland LPD falls in the main to the Shetland Islands Council, SEPA and Scottish Water.

Shetland Islands Council has the responsibility to produce a Local Flood Risk Management Plan. It is the responsibility of Shetland Islands Council to implement the range of different flood protection actions agreed within the Plan. During severe flooding, Shetland Islands Council will work with the emergency services and coordinate shelter for people evacuated from their homes.

SEPA is Scotland’s national flood forecasting, flood warning and strategic flood risk management authority. SEPA has a statutory duty to produce Scotland's national Flood Risk Management Plans. They work closely with other organisations responsible for managing flood risk through a network of partnerships and stakeholder groups to

ensure that a nationally consistent approach to flood risk management is adopted. SEPA also has a responsibility to identify where in Scotland there is the potential for natural flood management techniques to be introduced.

Scottish Water is a Responsible Authority for flood risk management and is working closely with SEPA, local authorities and others to coordinate plans to manage flood risk. Scottish Water has the public drainage duty and is responsible for foul drainage and the drainage of rainwater run-off from roofs and any paved ground surface from the boundary of properties. Additionally, Scottish Water helps to protect homes from flooding caused by sewers either overflowing or becoming blocked. Scottish Water is not responsible for private pipework or guttering within the property boundary.

Consultation, engagement and advice

Shetland Islands Council and SEPA have been keen to hear from the people and communities that live under the threat of flooding, to ensure that our technical analysis of the risks is accurate and that efforts to manage flooding are targeted to where most can be achieved. A joint statutory public consultation was held during the development of the national and local Plans to try to better understanding flooding in these priority areas and on the objectives and actions needed to manage flooding (2021). The views and representations of the respondents to the consultation were taken account of in developing and finalising the national and local Plans.

Further advice has been sought from relevant organisations at key stages. The local Plans have benefitted from input from the Shetland Local Advisory Group, providing important area-based knowledge on both the causes and consequences of flooding and on the appropriate actions for future management. Advice was also taken advice from a National Flood Management Advisory Group consisting of over 50 member organisations, reflecting the national importance and impact of flooding on our communities, economy, environment and cultural heritage.

Some of the work carried out has been complex and technical in nature for which professional advice was sought from across Scotland and beyond. Working together, SEPA, The Scottish Government, Shetland Islands Council, Scottish Water and other key interested organisations have assisted each other and developed industry best practice guidance for flood risk management planning.

Identification of objectives, appraisal and prioritisation of actions

Nationally the identification of objectives and appraisal of actions to reduce flood risk has been led by SEPA with significant local input from local authorities and Scottish Water. The setting of objectives and selecting the most sustainable actions to reduce flood risk in each Local Plan District will provide the long-term vision for Flood Risk Management in Scotland. Objectives set focus on the main sources and impacts of flooding identified for each Potentially Vulnerable Area in every Local Plan District. A wide range of actions were appraised, including flood protection works and schemes, flood protection studies, flood warning schemes, surface water management plans, and natural flood management studies and works.

To prioritise future actions across Scotland, as required in flood risk management planning, SEPA separated the technical, risk-based assessment of priorities from aspects of local, practical deliverability. In this way the data on the costs and impacts of actions is used alongside information from delivery and funding bodies to jointly agree priorities and identify indicative delivery dates for actions. A National Prioritisation Advisory Group was established to provide guidance to SEPA on the priority of flood risk management actions, having considered both the technical ranking prepared by SEPA and issues of local priority. This group was made up of representatives from SEPA, local authorities, CoSLA and Scottish Water.

The national set of plan provides the list of prioritised actions for the second six-year flood risk management planning cycle, 2022 to 2028. The local Plan identifies who will be responsible for each of the actions, a timetable of when they will be undertaken and the funding arrangements – see part 2.

The Act requires Scottish Government to have regard to the national set of plan and local Plan when allocating funding to SEPA and Responsible Authorities. The delivery of the actions in the second Flood Risk Management Plan cycle from 2022-2028, as detailed in the Local Flood Risk Management Plan, is therefore subject to revenue and capital funding allocations from Scottish Government to SEPA and Responsible Authorities; and to revenue and capital budget setting by councils and other Responsible Authorities over the period 2022-2028.

Strategic Environmental Assessment and Habitats Regulations Appraisal

A Strategic Environmental Assessment has been undertaken for the national set of plan which has informed the Local Plan. A SEA screening of the LFRMP was submitted to ascertain whether further assessment was required. The consultation responses agreed with the Council's view that the actions detailed in the local Plan did not exceed the scope of proposals already considered in the SEA of the national set of plan. Project level impact assessments will be undertaken if this is required for works resulting from the local Plan to comply with planning and environmental regulations.

Shetland Islands Council also undertook a Habitats Regulations Appraisal to ensure that the Plan will not have a likely significant effect on the integrity of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Nature Scot was consulted on the Appraisal and their views have been taken into account. Mitigation will be applied where required to ensure that the actions in Plan will not adversely affect the integrity or conservation objectives of any SPA or SAC.

Post-consultation communication and engagement

Feedback was received in early 2021 during public consultation on draft versions of the Flood Risk Management Strategy documents. The issues raised then were in regard to flood risk in areas not being covered under this local Plan as they do not meet the requirements set in the national assessment.
The Shetland Islands Council has the option of addressing further issues as part of their own programme of works but LFRMP actions are selected on a common national framework.

Both the national set of plan and the local Plan documents were developed through the Shetland Local Plan District Partnership working group, with close coordination with the local Shetland Flood Risk Management Local Advisory Group.

1.4 Links with other plans, policies, strategies and legislative requirements

The local Plan does not stand in isolation. As far as is practicable, an integrated approach to land and water management has been pursued. When developing the national and local Plans, early links were made with other relevant aspects of water and land management including Local Development Plans, River Basin Management Plans and Emergency plans. In turn, the Responsible Authorities will work proactively to ensure the findings from these Flood Risk Management Plans will influence other planning initiatives in an interactive and iterative cycle. Making these links has helped identify opportunities to deliver multiple benefits from flood risk management goals, objectives and actions.

River Basin Management Planning

Reducing flood risk in Scotland through the development of Flood Risk Management Plans has provided an opportunity to connect with plans to improve the quality of Scotland's water environment at the same time. For example, coordination between river basin management and flood risk management can reduce flood risk, whilst improving water quality and biodiversity.

SEPA is leading the delivery of River Basin Management Plans and national Flood Risk Management Plans, while local authorities lead for Local Flood Risk Management Plans, and they have worked together to ensure that there is integration and coordination between them. This coordination, particularly in regard to consultation and engagement, will be important for stakeholders many of whom have an interest in the objectives of both Plans.

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.

As a Responsible Authority under the Flood Risk Management (Scotland) Act 2009, Scottish Water is also working collaboratively with third parties such as SEPA and Local Authorities through the Flood Risk Management Planning process which will assess the risk of flooding into the future. As part of that work, Scottish Water has allocated investment to undertake further modelling and assessment in sewer catchments within PVAs to improve knowledge and understanding of flood risk from the sewers in these areas, as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. Work carried out under these Flood Risk Management (Scotland) Act 2009 duties will

continue to inform future investment requirements for Scottish Water.

Surface Water Management Planning

Surface water flooding is experienced in all Plan areas and is a key component of the flood risk assessment that has led to the development of this local Plan. Many of the actions in the local Plan seek to reduce general surface water flood risks but specific Surface Water Plans will be produced to look in more detail at locally specific problems in Lerwick and Scalloway.

Shetland Islands Council proposes to undertake further work on Surface Water Management Plans over the period of this second FRMP in two priority areas, Lerwick and Scalloway, which are described in more detail in section 2.7.

1.5 Next steps and monitoring progress

The local Plan runs from December 2022 to June 2028. Over this period the Shetland LPD partnership will continue to meet periodically to monitor progress towards implementing the actions detailed in Chapter 2 and Annex 1 of the Plan.

Before the end of year 3 of the FRM cycle (i.e. before December 2025), Shetland Islands Council, as lead authority will publish an interim report, including information on the progress that has been made towards implementing the measures identified in the implementation part of the local Plan.

During year 6 of the FRM cycle (i.e. before December 2028), Shetland Islands Council, as lead authority will publish a final report on the local Plan containing an assessment of the progress made towards implementing the current measures, a summary of the current measures which were not implemented, with reasons for their non-implementation, and a description of any other measures implemented since the plan was finalised which the Council considers have contributed to the achievement of the objectives summarised in the local Plan.

The Shetland Islands Council will make these reports available for public inspection.

1.6 Licensing acknowledgements

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

2: Managing Flood Risk in the Shetland Local Plan District

2.1 Understanding of flooding within the Shetland Local Plan District

The Shetland Local Plan District covers an area of around 1,500km² with a population of approximately 23,000 people. It includes all the islands from Fair Isle in the south to Unst in the north and 16 of the islands are inhabited. The islands are mainly gently sloping hills with areas of flat and lower lying ground present closer to the coast. Land cover is peat bog and heather grassland on the hills, with improved grazing on lower croft land and with some scattered agricultural land, particularly in the south. There are a number of large inland lochs, including Loch of Spiggie. The coastline is approximately 2,700km long and is typically hard and rugged with deep inlets (voes) and occasional beaches.

The main risk of flooding in Shetland is from coastal flooding. Shetland has been affected by coastal flooding from a combination of high tides, storm surges and waves. In December 2013 cyclone Xaver caused coastal flooding in many areas, including Sumburgh Airport and Lerwick. Catchments are generally small and surface water flooding tends to be from local intense flash floods notably in August 2018 when rainfall and flash flooding affected a number of areas, including Scalloway.

Heavy rainfall can also trigger peat slides on steep slopes such as occurred most notably in Sandwick and Channerwick in 2003, but also at Uradale in 2012, and in various other undeveloped locations.

Currently it is estimated that there are 210 people and 230 homes and businesses at risk from flooding. This may increase to 300 people and 300 homes and businesses by the 2080s due to climate change. The annual cost of flooding is approximately £650,000. Note however that flooding from wave overtopping is not fully represented in the assessment of flood risk and the impact of coastal flooding may be underestimated.

SEPA lead development of the flood risk management plans for Scotland and delivery of flood warning services. Local flood risk management planning is led by Shetland Islands Council. The other responsible authority in this district is Scottish Water.

This part of the plan presents the summaries of flooding for the Shetland Local Plan District and for the 4 Potentially Vulnerable Areas (PVAs). Planned actions to gather more information on how to manage flooding that have been prioritised for delivery between 2022 and 2028 across the whole of the LPD area and in each PVA are detailed. It identifies who will be responsible for the delivery and implementation of the actions, along with a timetable of when the actions will be undertaken and the funding arrangements.

2.2 Local Plan District Summary

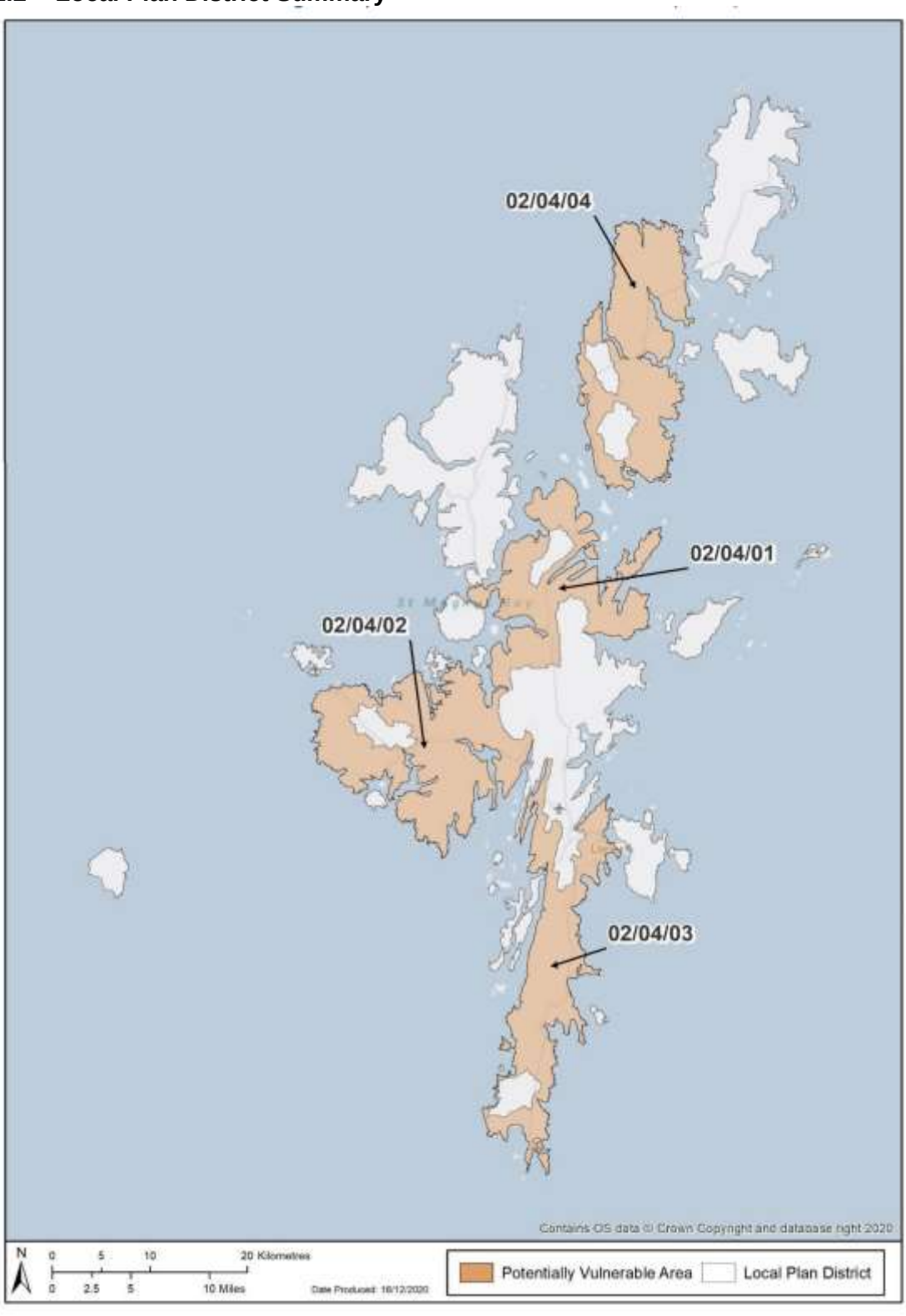


Figure 2.1: The Shetland catchment group
Reproduced from Shetland Flood Risk Management Plan, SEPA (December 2021)

The SIC, SEPA and other responsible authorities carry out actions in all areas of the Local Plan District which help to manage current and future flooding. These actions help to ensure that key aspects of flood risk management are taken forward in all locations. They ensure that for example new housing developments occur in the right places, and that critical flood risk information is developed and updated for all areas.

The following actions are due to take place over the next 6 years, and most of these are carried out on an ongoing basis

SEPA are responsible for developing national Flood Risk Management Plans (the national set of plans, formerly known as Strategies) giving background information on flooding history, characterisation and prioritising areas for setting Objectives, which provides the basis from which Lead Local Authorities develop Local Flood Risk Management Plans (the local Plans), identifying detail on what actions entail, who will undertake them and when they will be done.

Although the SEPA national set of plans and the local Plans are separate reports, much of the background information in each are the same and significant partnership working among the responsible authorities has been undertaken.

Table 2.2: Summary of actions in the LFRMP

LPD-wide / PVA	Selected Action	Location	Objective	Proposed delivery period
PVA 02/04/01	Vidlin Flood Protection Study (36901)	Vidlin coastal area	Reduce risk of current and future coastal flooding	Outline work in 2023-24, with any resulting further work then subject to prioritisation and funding
PVA 02/04/02	Walls Adaptation Plan (36801)	Walls coastal area	Reduce risk of current and future coastal flooding	Outline work in 2023-24, with any resulting further work then subject to prioritisation and funding
PVA 02/04/03	Lerwick Surface Water Management Plan (38301)	Lerwick South Burn of Gremista catchment	Reduce risk from surface water flooding	Heavily dependant on external factors
PVA 02/04/03	Scalloway Surface Water Management Plan (44201)	Scalloway Burn Beach	Reduce risk from surface water flooding	Works streams may potentially run during the whole 2022-28 cycle
PVA 02/04/03	Scalloway Shoreline Management Plan (Coastal Adaptive Plan) (44202)	Scalloway developed shorline	Reduce risk of current and future coastal flooding	Works streams may potentially run during the whole 2022-28 cycle
PVA 02/04/03	Cunningsburgh Flood scheme implimentation (44801)	Cunningsburgh - North bridge	Reduce the risk of flooding from the Burn of Laxdale to Cunningsburgh and the road connecting Lerwick to Sumburgh	Capital funding application in 2023-24, with works timescales then subject to prioritisation and funding
PVA 02/04/04	Cullivoe Flood scheme design (38801)	Stonganess	Develop an adaptive approach for coastal flooding resulting from climate change to the B9082 to the ferry terminal	Design will be completed in the 2022-28 cycle
PVA 02/04/04	Cullivoe Flood scheme implimentation (38802)	Stonganess	Reduce the risk of flooding to the B9082 to the ferry terminal	Construction is currently expected to be completed in the 2022-28 cycle
PVA 02/04/04	Cullivoe Community engagement (38803)		Reduce overall flood risk	TBC – The type and level of risk remaining to highlight will depend on the scheme as designed and built.
PVA 02/04/04	Cullivoe Property flood resilience scheme (38804)		Reduce overall flood risk	TBC – The type and level of risk remaining to highlight will depend on the scheme as designed and built.
LPD Wide	Awareness Raising	LPD Wide	Reduce overall flood risk	On-going
LPD Wide	Data to support climate resilience	LPD Wide	Reduce overall flood risk	2022-2028
LPD Wide	Emergency Plans	LPD Wide	Reduce overall flood risk	On-going
LPD Wide	Flood Forecasting	LPD Wide	Reduce overall flood risk	On-going

LPD-wide / PVA	Selected Action	Location	Objective	Proposed delivery period
LPD Wide	Flood warning development framework	LPD Wide	Reduce overall flood risk	2022-2028
LPD Wide	Future flood risk management planning	LPD Wide	Reduce overall flood risk	Ongoing / 2022-2028 Flooding services strategy 2023 Next flood risk management plans 2027
LPD Wide	Guidance development	LPD Wide	Reduce overall flood risk	Draft flood studies guidance (SEPA) 2023 Options appraisal & Adaptation guidance (SG & SEPA) 2023 Other guidance & updates 2023-2028
LPD Wide	Hazard mapping updates	LPD Wide	Reduce overall flood risk	2022-2028
LPD Wide	Land Use Planning	LPD Wide	Avoid an overall increase in flood risk Reduce overall flood risk	On-going
LPD Wide	Maintenance	LPD Wide	Reduce overall flood risk	On-going
LPD Wide	Natural flood management mapping	LPD Wide	Reduce overall flood risk	2025
LPD Wide	National flood risk assessment	LPD Wide	Reduce overall flood risk	December 2024
LPD Wide	National surface water mapping	LPD Wide	Reduce overall flood risk	2024
LPD Wide	Reservoirs	LPD Wide	Reduce overall flood risk	Ongoing / 2022-2028 Flood warning developments 2022-2024
LPD Wide	Scottish Flood Defence Asset Database	LPD Wide	Reduce overall flood risk	2022-2028
LPD Wide	Self Help	LPD Wide	Reduce overall flood risk	On-going

2.3 Local Plan District Overview

This Local Plan District comprises all the islands which are part of the Shetland Islands. It has an area of approximately 1,500 km2 and a coastline with a length of approximately 2,700km.

There are four Potentially Vulnerable Areas (PVAs) in the Shetland Local Plan District.

Objectives and actions in the Shetland Local Plan District

SEPA and responsible authorities carry out actions in all areas of the Local Plan District which help to manage current and future flooding. These actions help to ensure that key aspects of flood risk management are taken forward in all locations.

They ensure that for example new housing developments occur in the right places, and that critical flood risk information is developed and updated for all areas. The following actions are due to take place over the next 6 years, and most of these are carried out on an ongoing basis.

	Awareness raising
Action	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.
Coordination	The Shetland Islands Council, SEPA and Scottish Water will co-ordinate awareness raising activities with other Responsible Authorities, through the regular Local Plan District Partnerships and Flood Risk Management Local Area Group meetings.
Funding	Council involvement is funded from existing SIC revenue budgets SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.
Lead	Shetland Islands Council and SEPA
Timescale	On-going

	Data to Support Climate Resilience
Action	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. 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. 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.
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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	2022 - 2028

	Emergency plans
Action	Many organisations, including local authorities, the emergency services and SEPA provide an emergency response to flooding. Emergency plans are prepared and maintained under the Civil Contingencies Act 2004 by Category 1 and 2 Responders and are coordinated through regional and local resilience partnerships, often supported by voluntary organisations. They set out the steps to be taken to maximise safety and minimise impacts during flooding. Emergency plans may also be prepared by individuals, businesses, organisations or communities.

	Scottish Water is a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.
Coordination	The Shetland Islands Council have a Major Emergency Plan which is a generic contingency plan to enable the Council's response to a major emergency.
Funding	Emergency Planning and other Council service actions are funded from existing SIC revenue budgets
Lead	Category 1 and 2 Responders
Timescale	On-going

	Flood forecasting
Action	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. 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.
Coordination	SEPA work in partnership with the Met Office and will work closely with all other authorities involved in emergency response to flooding. Warnings received are circulated to the Council's Severe Weather email list as it the possibility of flooding is usually linked to high winds in a particular direction together with high tides / storm surge.

Funding	SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government. There are existing SIC revenue budgets covering internal costs
Lead	Scottish Flood Forecasting Service
Timescales	On-going

	Flood Warning Development Framework
Action	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. 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. 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. 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.
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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.

Lead	SEPA
Timescale	2022 - 2028

	Future Flood Risk Management Planning
Action	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. 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. SEPA has set its own target to be a regenerative organisation by 2030 and the next set of plans will further this ambition. 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.
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
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	Ongoing / 2022-2028 Flooding services strategy 2023 Next flood risk management plans

	Guidance development
Action	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. Technical guidance to support flood risk management partners will be reviewed and updated by SEPA where required. Scottish Forestry, in collaboration with its UK counterparts, will produce guidance on designing and managing forests to reduce flood risk. 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.
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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	Various
Timescale	Draft flood studies guidance (SEPA) 2023 Options appraisal & Adaptation guidance (SG & SEPA) 2023 Other guidance & updates 2023-2028

	Hazard Mapping Updates
Action	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: https://www.sepa.org.uk/environment/water/flooding/flood-maps/. 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.
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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	2022-2028

	Land use planning
Action	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. Areas in Shetland identified for development in the Local Development Plan have had initial flood risk assessments carried out as part of their consideration. Applications for developments have requirements to address flooding and drainage in a suitable way, and a local Supplementary Guidance document gives advice. Applications which fall under the 5m contour (for coastal flood risk) or within the 1 in 200 year flood risk areas on SEPA's flood maps (for surface water and river flood risks) are required to provide more detail to confirm the flood risks have been considered and dealt with. SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act.

	Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website http://www.sepa.org.uk/environment/land/planning/ Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by Shetland Islands Council.
Coordination	Production of the Shetland Local Development Plan and specifically the "Call for Sites" process included a multi-stage consultation with public and other stakeholders. There are consultations with Council and Non-Council stakeholders as part of consideration of planning applications.
Funding	Development Planning and other Council service input funded from existing revenue budgets SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.
Lead	Shetland Islands Council and SEPA
Timescale	On-going

	Maintenance
Action	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.
Coordination	Shetland Islands Council will publish a schedule of planned watercourse inspection, clearance and repair works. Awareness of third party works impacts on watercourses or flood protection infrastructure will be raised with authorities through the required planning permission and/or other required licensing processes and discussions at LPDP and FLAG group meetings. Scottish Water will keep Responsible Authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.
Funding	Roads Service inspections are funded from existing SIC revenue budgets
Lead	Shetland Islands Council
Timescale	On-going

	Natural Flood Management Mapping
Action	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.
Co-ordination	SEPA will work with key stakeholders to review and update the opportunities mapping.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	2025

	National Flood Risk Assessment
Action	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.
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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	2024

	National Surface Water Mapping
Action	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 wholescale update of the national surface water maps to reflect developments in data and understanding, including the impact of climate change.
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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	2024

	Reservoirs
Action	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.
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.
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	Ongoing / 2022-2028 Flood warning developments 2022-2024

	Scottish Flood Defence Asset Database
Action	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.
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
Funding	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.
Lead	SEPA
Timescale	2022-2028

	Self help
Action	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: https://www.floodre.co.uk/ https://www.biba.org.uk/current-issues/flood-insurance/ https://floodlinescotland.org.uk/ https://scottishfloodforum.org/ 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.
Coordination	Where premises are subject to historical flooding the owners are aware of

	their responsibilities and that flood damage can be reduced by suitable provision and maintenance of drainage and flood protection infrastructure, including property level protection.
Funding	General information is made available as part of existing Shetland Islands Council awareness raising activities. There are no existing specific Council budgets for funding self help works.
Lead	Everyone
Timescale	On-going

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

2.4 Potentially Vulnerable Areas

PVA Ref	PVA Name	Page number
02/04/01	Shetland North Mainland	30
02/04/02	Shetland West Mainland	33
02/04/03	Shetland Central and South Mainland	36
02/04/04	Yell	46

The table below summarises the actions to manage flood risk in the Potentially Vulnerable Areas of this Local Plan District. Further detail is provided in sections 2.5 to 2.8 for each Potentially Vulnerable Area.

Table 2.5: Proposed flood actions for each PVA

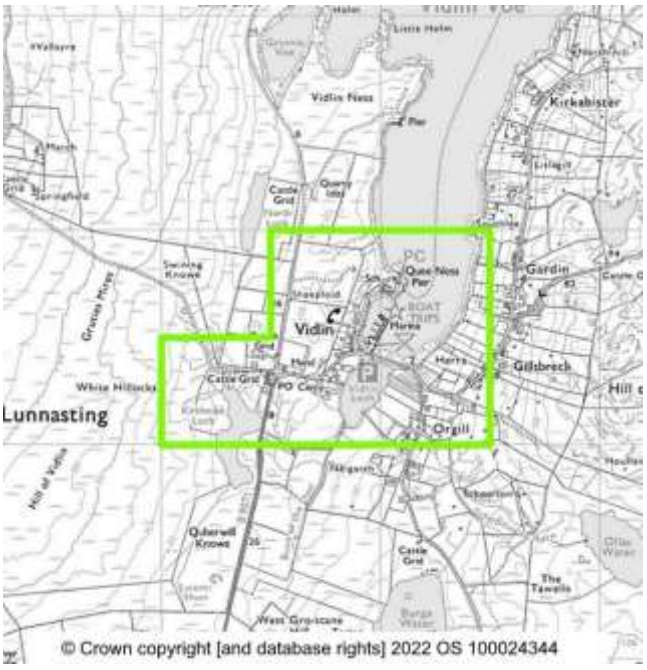
PVA	Flood protection study	Surface water plan/study	Strategic mapping and modelling	Adaptation Plan	Community Engagement	Property Flood Reslience Scheme	Flood Scheme / Works Design	Flood Scheme / Works implimentation	Shoreline Management Plan	Flood forecasting	Self help	Awareness raising	Maintenance	Emergency plans/response	Planning policies
02/04/01	☑									☑	☑	☑	☑	☑	☑
02/04/02				☑						☑	☑	☑	☑	☑	☑
02/04/03		☑						☑	☑	☑	☑	☑	☑	☑	☑
02/04/04					☑	☑	☑	☑		☑	☑	☑	☑	☑	☑

2.5 Flood risk, objectives, actions and prioritisation for Shetland North Mainland (PVA 02/04/01)

This area is designated as a potentially vulnerable area due to the risk of coastal flooding in Vidlin. Coastal flood risk is likely to increase due to sea level rise caused by climate change.

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.

Vidlin (target area 369)

Summary	Location map
Vidlin is located along the western shore of Vidlin Voe, on Mainland Shetland in the Shetland Islands Council area. The main source of flooding to Vidlin is coastal flooding. A local assessment indicates that few properties are currently at risk of flooding. However, the number of properties at risk is expected to increase due to the impacts of climate change on sea level rise. There is concern of sea level rise affecting flood risk to the Vidlin causeway.	

What is the current understanding of flood risk?

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 coastal flooding through a flood study in Vidlin, carried out by the Shetland Islands Council as part of the actions in cycle1 of the Local Flood

Risk management Plan. This included an aerial drone survey to assess the local topography as the area has not yet been covered by national LIDAR surveying.

The impacts of climate change on future sea levels were also assessed based on the latest data (United Kingdom Climate Projections 2018). There are no records of flooding of buildings in the Vidlin target area but this does not confirm that there is no flood risk.

The primary current concern is breaking waves and spray running over the causeway which significantly affects pedestrian use. This may occur more frequently in the future due to the impacts of climate change on sea level rise, and as rises become more significant there may also be risk to vehicular traffic and to the structural stability of the causeway.

Objective ref	Objective type	Objective Description
3691	Avoid flood risk	Avoid inappropriate development that increases flood risk in Vidlin.
3692	Improve data and understanding	Improve data and understanding of the risk of coastal flooding resulting from climate change to the Vidlin causeway.
3693	Prepare for flooding	Prepare for current flood risk and future flooding as a result of climate change in Vidlin.

What actions are proposed for this area?

As outlined in Section 1 of this plan the actions below are those set out by SEPA in their national flood plan, and represent the best understanding of what is needed to work towards the objectives for the area. They have been developed with the other responsible authorities and take account of progress achieved to date, the understanding of flood risk and the objectives set for the area.

Now in the Shetland Local Flood Risk Management Plan we look to add more detailed information on the local issues, proposed actions, their timing and how they will be funded and coordinated.

Action ID	Vidlin 36901
Action Type	Flood study
Action	An understanding of flood risk and associated issues in the area is to be developed involving surveys and wave modelling and will consider the impacts of climate change on flood risk. Where flood risk is confirmed, a range of possible options to manage flood risk are to be identified and a preferred approach is to be chosen, including adaptive planning to allow for the impacts of climate change to be monitored, understood and managed. The work will focus on the road causeway: - the current issues of wave and spray, and changes that future sea level rise could bring to those existing problems, as well as the new problems that could be created.
Description	A flood study is needed to assess future still water flood levels relative to the road causeway. Climate change is expected to cause rising sea levels and changes to storm patterns. This could lead to flooding or issues of wave and spray breaking over the road happening more often. It is important to plan for this and ensure future risk to communities and infrastructure is managed appropriately. The need for an adaptation plan should be assessed, as that may help assess how a phased series of works could be used to give appropriate protection during long term changes..
Coordination	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised. The survey and study will be carried out after discussion with SEPA hydrologists to ensure the information is as useful and relevant as possible. Results may help to inform future revisions of SEPA's flood maps
Funding	Initial scoping will be carried out under existing council budgets. Survey, modelling and design work would be funded if the works receive funding through the Council's Capital Programme.
Lead	Shetland Islands Council
Timescale	Outline work in 2023-24, with any resulting further work then subject to prioritisation and funding

2.6 Flood risk, objectives, actions and prioritisation for Shetland West Mainland (PVA 02/04/02)

This area is designated as a potentially vulnerable area due to coastal flood risk to Walls. Coastal flood risk is likely to increase due to sea level rise caused by climate change.

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.

Walls (target area 368)

Summary	Location map
Walls is located on the west side of Mainland Shetland in the Shetland Islands Council area. The main source of flooding in Walls is coastal flooding. A local assessment indicates that few properties are currently at risk of flooding, however the number of properties at risk is expected to begin to increase significantly with any sea level rise from the impacts of climate change.	

What is the current understanding of flood risk?

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 coastal flooding through a flood study in Walls carried out by the Shetland Islands Council as part of the actions in cycle1 of the Local Flood Risk management Plan. This included an aerial drone survey to assess the local topography as the area has not yet been covered by national LIDAR surveying.

The impacts of climate change on future sea levels were also assessed based on the latest data (United Kingdom Climate Projections 2018).

There are limited records of historic flooding in Walls but the ground level information gathered shows that there are several properties close to the level of the current 1 in 200 year coastal flood risk, and that the margins are small enough that relatively low rises in sea level through climate change start to bring immediate increases in risk to properties.

Objective ref	Objective type	Objective Description
3681	Avoid flood risk	Avoid inappropriate development that increases flood risk in Walls.
3682	Prepare for flooding	Prepare for current flood risk and future flooding as a result of climate change in Walls.

What actions are proposed for this area?

As outlined in Section 1 of this plan the actions below are those set out by SEPA in their national flood plan, and represent the best understanding of what is needed to work towards the objectives for the area. They have been developed with the other responsible authorities and take account of progress achieved to date, the understanding of flood risk and the objectives set for the area.

Now in the Shetland Local Flood Risk Management Plan we look to add more detailed information on the local issues, proposed actions, their timing and how they will be funded and coordinated.

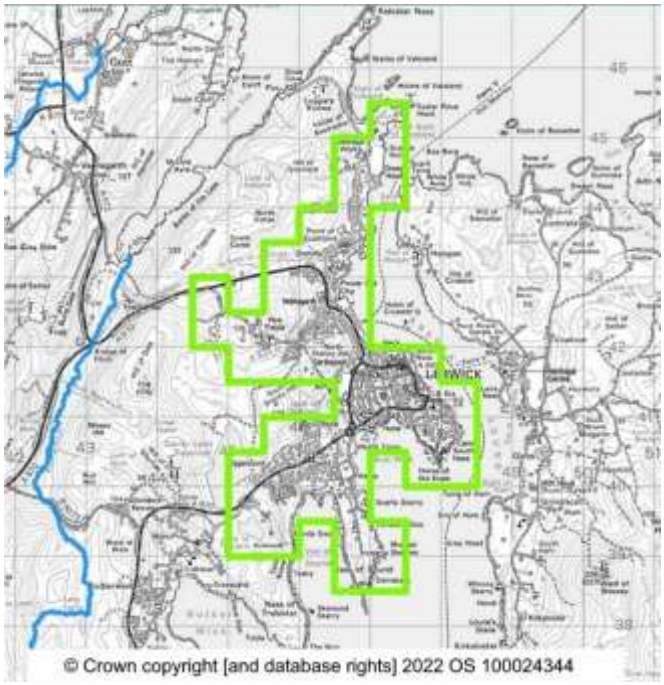
Action ID	Walls 36801
Action Type	Adaptation plan
Action	Information on climate change is to be used to develop an adaptation plan to allow for the impacts of climate change to be monitored, understood and managed. Inital ground level survey work carried out in cycle 1 has given an understanding of flood risk to buildings in the area, and broadly shows buildings becoming at risk with any rise in sea levels from climate change. Where flood risk is confirmed, a range of possible options to manage flood risk are to be identified and a preferred approach is to be chosen, including adaptive planning to allow for the impacts of climate change to be monitored, understood and managed. The buildings at risk are spread around a significant length of coast and so an approach focused on each building individually will be needed.
Description	An Adaptation Plan should be developed based on the previous cycle 1 works carried out to look at existing ground levels. Climate change will cause rising sea levels and changes to storm patterns. This would lead to both higher base coastal flood levels, as well as more intense wave run up effects and the potential for great errosion. In general, flooding happening more often. It is important to plan for these longer term changes with a phased arroach of actions based on the ongoing changes in risk, in order to ensure there is a balanced and planned approach to managing risk to communities and infrastructure.
Coordination	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised. The Adaption Plan process is still to be clarified, including the duration, scale and lead bodies.
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC
Lead	Shetland Islands Council
Timescale	Outline work in 2023-24, with any resulting further work then subject to prioritisation and funding

2.7 Flood risk, objectives, actions and prioritisation for Shetland Central and South Mainland (PVA 02/04/03)

This area is designated as a potentially vulnerable area due to the risk of flooding from small rivers and surface water to Lerwick and Cunningsburgh, and from combined effects of waves, tide and surface and burn flows in Scalloway.

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

Lerwick (target area 383)

Summary	Location map
Lerwick is the main town within the Shetland Islands Council area. The main source of flooding in Lerwick is surface water. There are approximately 50 people and 70 homes and businesses currently at risk from flooding. This is likely to increase to 60 people and 70 homes and businesses by the 2080s due to climate change.	 © Crown copyright [and database rights] 2022 OS 100024344

What is the current understanding of flood risk?

Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources.

The national level assessment has been supported and improved for surface water flood risk through the on-going development of a surface water management plan for Lerwick by the Shetland Islands Council and the completion of a sewer flood risk assessment by Scottish

Water.

There are periodic records of flooding in Lerwick.

A recent flood in November 2020 was caused by surface water following persistent rainfall. There are also records of coastal flooding around the harbour areas.

Objective ref	Objective type	Objective Description
3831	Avoid flood risk	Avoid inappropriate development that increases flood risk in Lerwick
3832	Prepare for flooding	Prepare for current flood risk and future flooding as a result of climate change in Lerwick
3833	Reduce flood risk	Reduce the risk of surface water flooding in Lerwick.

What actions are proposed for this area?

As outlined in Section 1 of this plan, at the date of publication the actions below represent the best understanding of what is needed to work towards the objectives for the area.

They have been developed with the other responsible authorities and take account of progress achieved to date, the understanding of flood risk and the objectives set for the area.

Now in the Shetland Local Flood Risk Management Plan we look to add more detailed information on the local issues, proposed actions, their timing and how they will be funded and coordinated.

Action ID	Lerwick 38301
Action Type	Surface water management plan
Action	Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding where culverts limit the burn dischargesand/or cause the drainage systems to be overwhelmed have been identified. The next steps in managing such water ponding or over-whelmed drainage systems have been identified and possible approaches to implementing these will be developed. The plan is to be reviewed and updated as needed.
Description	Existing flood risks are known from historical incidents on the South Burn of Gremista in Lerwick and are related to undersized burn culverts. In cycle 1 there was an expectaton that redevelopment of the Lerwick powerstation site was likely and would give oppertunities to deculvert the lower part of the burn and make a significant difference to flood risk there. Events have taken a different course, and the power station site remains in use. Studies by SIC and also as part of other development in the area have produced consistent results in forecasting flood volumes at different levels of risk and future work will now look at options to make changes to burn and sewer flows to try and minimise risks. Ownership of burn culverts is spread over a range of Council, Private and 3rd party bodies, and cooperation in approach and funding would need to be agreed.
Coordination	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised.
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC
Lead	Shetland Islands Council
Timescale	Heavily dependant on external factors

Scalloway (target area 442)

Summary

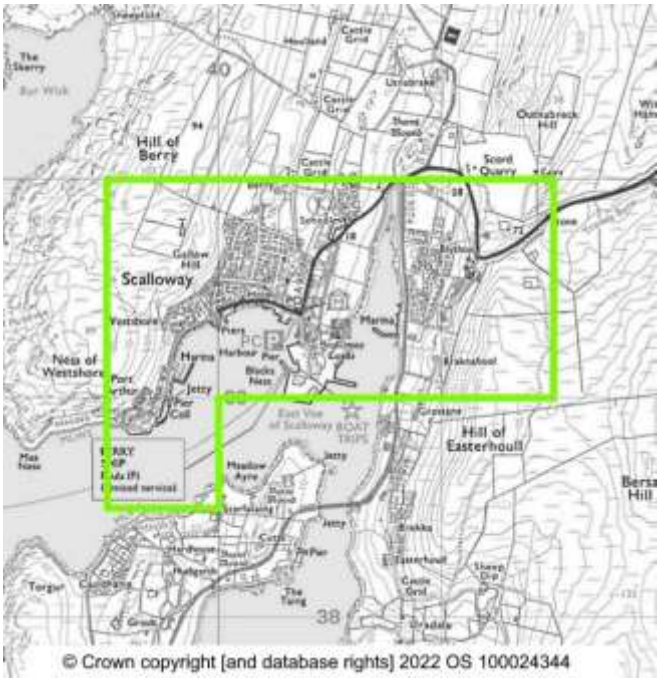
Scalloway is on the west coast of Mainland, the largest of the Shetland Islands and is in the Shetland Islands Council area.

The main source of flooding in Scalloway is from surface water and small water courses. This is worsened when the water cannot drain into the sea during high tides and storm surges. There is also a risk of coastal flooding, which is underestimated in the current flood maps.

There are approximately 20 people and 10 homes and businesses at risk from flooding.

The future effects of climate change on flood risk changes in the area resulting from sea level risk and the drainage system are likely underestimated.

Location map



What is the current understanding of flood risk?

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 through the development of a surface water management plan for Scalloway. This is linked to the Scalloway Local Place Plan which considered future waterfront development and flood risk issues. A sewer flood risk assessment has also been completed. There are recent records of periodic flooding in Scalloway. This include notable surface water and river flooding in August 2012. The flooding was exacerbated when the high tide blocked the outflow of the burn.

Objective ref	Objective type	Objective Description
4421	Avoid flood risk	Avoid inappropriate development that increases flood risk in Scalloway
4422	Prepare for flooding	Prepare for current flood risk and future flooding as a result of climate change in Scalloway
4423	Prepare for flooding	Develop an adaptive approach for Scalloway seafront to future coastal flooding resulting from climate change.
4424	Reduce flood risk	Reduce the risk of flooding from surface water and small water courses in Scalloway.

What actions are proposed for this area?
As outlined in Section 1 of this plan, at the date of publication the actions below represent the best understanding of what is needed to work towards the objectives for the area. They have been developed with the other responsible authorities and take account of progress achieved to date, the understanding of flood risk and the objectives set for the area. Now in the Shetland Local Flood Risk Management Plan we look to add more detailed information on the local issues, proposed actions, their timing and how they will be funded and coordinated.

Action ID	Scalloway 44201
Action Type	Surface water management plan
Action	Areas at risk of heavy or prolonged rainfall causing flooding due to surface water run off overloading drainage systems when combined with tidal effects have been identified. The next steps in managing such water ponding or over-whelmed drainage systems have been identified and possible approaches to implementing these will be developed. The plan is to be reviewed and updated as needed.
Description	Existing flood risks are known from historical incidents where combinations of rainfall and hightide lead to overflows in the surface water drainage at the Burn Beach outfall. Information has been gathered in cycle 1 on coastal ground levels and on the drainage networks contributing to the burn and an outline proposals for an overflow culvert has been considered. The Scalloway Local Place Plan has also produced potential future projects and improvements in the area, which mayimpact on, or form contributing parts to, the drainage works which could be considred. In cycle 2 the aim will be to draw together the different potential changes being considered, and their funding streams, in a way that best helps give a sustainable range of actions to address or mitigate the flood risks at Burn Beach.
Coordination	There are identified flood risks at locations involving Council, Scottish Water and third party properties and drainage infrastructure. SIC will lead the investigation of the catchments, but consideration of options and future work leading on from that will involve a wide range of groups.
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC
Lead	Shetland Islands Council
Timescale	Works streams may potentially run during the whole 2022-28 cycle

Action ID	Scalloway 44202
Action Type	Shoreline management plan (coastal adaptive plan)
Action	The ground level information gathered in cycle 1 is sufficient to show that coastal flood risk of buildings will increase with future sea level rises. An assessment of coastal flood and erosion risks created at various levels of long term sea level change is to be carried out. The plan should include assessment of climate change and develop adaptive approaches to allow for the impacts of climate change to be monitored, understood and managed.
Description	A shoreline management plan should be developed. This should review the existing coastal defences and assess future implications of the protection provided as sea levels rise. It is important to plan for this and ensure future risk to communities and infrastructure is managed appropriately. The need for an adaptation plan should be assessed, as that may help assess how a phased series of works could be used to give appropriate protection during long term changes. The plan will be integrated with the surface water management plan and Scalloway Local Place Plan, to give a better appreciation of connected factors
Coordination	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised.
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC
Lead	Shetland Islands Council
Timescale	Works streams may potentially run during the whole 2022-28 cycle

Cunningsburgh (target area 448)

Summary

Cunningsburgh is on the Shetland mainland, within the Shetland Islands Council area.

The primary source of flooding is from the Burn of Voxter.
Flooding can affect the road that connects Lerwick to Sumburgh airport.

There are less than 10 people and homes currently at risk from flooding.

This is estimated to remain the same by the 2080s despite the effect of climate change.

Location map

What is the current understanding of flood risk?

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 flooding from the Burn of Voxter due to the Cunningsburgh flood study.

There are limited records of flooding in the Cunningsburgh area. The floods that have been recorded in this area are associated with flooding from the Burn of Voxter.

Historically there have been flood events with the burn overflowing the A970 at North Bridge, which also caused flooding to a building from the accumulation of ponding water.

Objective ref	Objective type	Objective Description
4481	Avoid flood risk	Avoid inappropriate development that increases flood risk in Cunningsburgh
4482	Prepare for flooding	Prepare for current flood risk and future flooding as a result of climate change in Cunningsburgh
4483	Reduce flood risk	Reduce the risk of flooding from the Burn of Laxdale to Cunningsburgh and the road connecting Lerwick to Sumburgh

What actions are proposed for this area?
As outlined in Section 1 of this plan, at the date of publication the actions below represent the best understanding of what is needed to work towards the objectives for the area. They have been developed with the other responsible authorities and take account of progress achieved to date, the understanding of flood risk and the objectives set for the area. Now in the Shetland Local Flood Risk Management Plan we look to add more detailed information on the local issues, proposed actions, their timing and how they will be funded and coordinated.

Action ID	Cunningsburgh 44801
Action Type	Flood scheme or works implementation
Action	The site survey work carried out in cycle 1 is sufficient to outline protection works thart could be carried out to reduce flood risk. The flood works will be submitted for possible SIC capital funding, and designed, developed and built if funding is given.
Description	The A970 is the key road linking the southern end of the mainland, including the airport at Sumburgh, to the rest of Shetland. Flooding in the Cunningsburgh area causes significant disruption to residents, commuters, and visitors. An outline study was carried out in cycle 1 looking at options at the A970 North bridge - Burn of Laxdale culvert. Flood risk could be reduced by forming a bund at the west burn bank, to allow greater surcharging of the existing culvert before overflows occur, and by adding a large grating with an overflow culvert under the A970 west of the main culvert, to help allow ponding water to be drained before the depth builds up to the extent of causing flooding to property.
Coordination	The action delivery lead is Shetland Islands Council
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Construction of the scheme would depend on SIC Capital Programme funding being awarded.
Lead	Shetland Islands Council
Timescale	Capital funding application in 2023-24, with works timescales then subject to prioritisation and funding

2.8 Flood risk, objectives, actions and prioritisation for Shetland Yell (PVA 02/04/04)

This area is designated as a potentially vulnerable area due to the risk of coastal flooding to the public road connecting Cullivoe to the ferry terminal and the rest of the road network in Yell. Coastal flood risk is likely to increase due to sea level rise caused by climate change. Recent flooding was a result of coastal flooding.

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

Cullivoe (target area 388)

Summary	Location map
Cullivoe is located along the east coast of Yell and is within the Shetland Islands Council area. The only significant source of flooding in Cullivoe is coastal flooding. Coastal flooding affects road access to the south, the only road link to the rest of the island. There are less than 10 people, homes and businesses currently at risk from flooding. This is likely to remain the same by 2080s irrespective of climate change although frequency of disruption to road access is likely to increase.	

What is the current understanding of flood risk?

Since 2011 SEPA has developed and updated national level assessments of flooding from rivers, surface water and coastal sources, and this national assessment has highlighted the risk of coastal flooding affecting the road south to the ferry terminal and the rest of the road network and so disrupting all transport links to Cullivoe.

Cullivoe has therefore been identified as a new target area for the 2021 flood risk management plans.

The national level assessment is improving for coastal flooding and recent modelling updates for the Bluemull Sound area now appear to better match the coastal flooding levels and frequency that local reports have shown.

The Shetland Islands Council is currently designing a revised road alignment at a higher level as part of the wider Cullivoe Road project. The raised road level would help to counter the greater risk of future flooding that would otherwise occur with sea level rise due to climate change.

Objective ref	Objective type	Objective Description
3881	Prepare for flooding	Prepare for current flood risk and future flooding as a result of climate change in Cullivoe
3881	Prepare for flooding	Develop an adaptive approach for coastal flooding resulting from climate change to the B9082 to the ferry terminal

What actions are proposed for this area?

As outlined in Section 1 of this plan, at the date of publication the actions below represent the best understanding of what is needed to work towards the objectives for the area.

They have been developed with the other responsible authorities and take account of progress achieved to date, the understanding of flood risk and the objectives set for the area.

Now in the Shetland Local Flood Risk Management Plan we look to add more detailed information on the local issues, proposed actions, their timing and how they will be funded and coordinated.

Action ID	Cullivoe 38801
Action Type	Flood scheme or works design
Action	Proposals to build a new length of realigned road are intended to be built as part of the new Cullivoe Road scheme, which currently has funding as part of the SIC capital programme.
Description	A design for a new road alignmentis being progressed as part of the Cullivoe Road improvement scheme, and has a scope that would allow the flood risk on the existing road to be addressed. The proposed levels meet the 1 in 200 year (0.5% annual exceedance probability) standard of protection plus climate change. In accordance with the flood risk management plan, as part of the scheme or works, the responsible authority should aim to ensure that the action will not have an adverse effect on the integrity of the Bluemull and Colgrave Sounds Special Protection Area.
Coordination	The action delivery lead is Shetland Islands Council
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Construction of the scheme would depend on SIC Capital Programme funding being awarded.
Lead	Shetland Islands Council
Timescale	Construction is currently expected to be completed in the 2022-28 cycle

Action ID	Cullivoe 38802
Action Type	Flood scheme or works implementation
Action	Proposals to build a new length of realignedroad are intended to be built as part of the new Cullivoe Road scheme, which currently has funding as part of the SIC capital programme.
Description	Construction of the new road alingment alignment is expected to be carried out as part of the Cullivoe Road improvement scheme. The design addresses flood risk to the 1 in 200 year + climate change level of risk, which is sufficient for the lifetime of the road.
Coordination	The action delivery lead is Shetland Islands Council. SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD.
Funding	Construction of the scheme would depend on SIC Capital Programme funding being awarded.
Lead	Shetland Islands Council
Timescale	Construction is currently expected to be completed in the 2022-28 cycle

Action ID	Cullivoe 38803
Action Type	Community engagement
Action	Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.
Description	The responsible authorities to continue to engage with the community. The reduction in flood risk to the road connection which the newroad alignment works will provide to the wider community will be highlighted. The remaining flood risk to buildings in the area, and the need to be aware of flood warnings will also be covered. The risk of coastal flooding in the area appears to be more frequent than earlier flood warning predictions indicated, and this local aspect of the flood prediction modelling should be addressed.
Coordination	The action delivery lead is Shetland Islands Council
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC
Lead	Shetland Islands Council
Timescale	TBC – The type and level of risk remaining to highlight will depend on the scheme as designed and built.

Action ID	Cullivoe 38804
Action Type	Property flood resilience scheme
Action	The remaining coastal flood risk to properties may be able to be reduced by providing resilience measures against flooding for individual buildings.
Description	Any residual flood risk to buildings that remains after the new road alignment works have been carried out may be able to be managed or reduced with property flood resilience.
Coordination	The action delivery lead is Shetland Islands Council
Funding	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC
Lead	Shetland Islands Council
Timescale	TBC – The type and level of risk remaining to highlight will depend on the scheme as designed and built.

2.9 Other flood risk activities in the Shetland Local Plan District

The Plan presents the actions to manage flood risk in Shetland Local Plan District. These actions are at a LPD-wide scale or are targeted at a specific PVA. In addition to the actions in this Plan, the Shetland Islands Council is undertaking other activities to manage flood risk with the main examples being:

Section 18 & 59: Works of Clearance and Repair

Based on an assessment of the condition of a body of water, local authorities must prepare a schedule of clearance and repair works that would substantially reduce the risk of flooding of land. This is commonly referred to as a Schedule 18, which is made available for public inspection. Under s.59 of the Act, the Shetland Islands Council must carry out the works in the Schedule 18 if it considers that this will contribute to the implementation of actions in the Plan, but that these works will not affect the implementation of actions in this Plan. Details of how to access Schedule 18s for the Shetland Local Plan District are included in Annex 3 of the Plan.

Actions include maintenance and repairs to bridges, culverts and drains. Since 2008 repairs which help manage flood risk have been carried out to structures on the Twart Burn, North Burn, Trondavoe Burn, and Burns of Brigadale amongst others.

Section 56: General Power to manage flood risk

Without affecting the implementation of actions in this Plan, Shetland Islands Council may do anything which it considers will contribute to the implementation of actions in the Plan or is necessary to reduce the risk of a flood which is likely to occur imminently and have serious adverse consequences for human health, the environment, cultural heritage or economic activity in its area.

There are also several existing historical coastal protection structures at various locations throughout Shetland which provide erosion and/or flood protection benefits, including protection to private structures. These are listed below for each PVA.

PVA 02/04/01 - Summary of existing local actions to manage risk	
Location of Structure	**Purpose of Structure**
Vidlin Causeway	Erosion / wave action
Vidlin School (Lunnasting Primary School)	Flood protection
Lunna House	Erosion
Welcome Inn, Mossbank	Erosion
Sullom Voe Terminal access road	Flood protection
Mavis Grind	Flood protection & erosion
Ollaberry Cemetery	Erosion
Urafirth	Flood protection
Hillswick	Flood protection
Busta, Brae	Flood protection & erosion
Road west of Mulla	Erosion

PVA 02/04/02 - Summary of existing local actions to manage risk	
Location of Structure	**Purpose of Structure**
Grunnavoe	Erosion
Reawick Beach access road	Erosion
Tresta	Flood protection & erosion
Weisdale Voe	Erosion
Loch of Hellister	Erosion
Whiteness Brig causeway	Erosion

PVA 02/04/03 - Summary of existing local actions to manage risk	
Location of Structure	**Purpose of Structure**
Ireland graveyard access road	Erosion
Sumburgh runway (east and west)	Erosion
Scatness broch car park	Flood protection & erosion
Jarlshof	Flood protection & erosion
Grutness	Flood protection
Noness roadside defence	Erosion
Sandlodge	Flood protection
Cliffs of Cunningsburgh road	Erosion
Lerwick (Sea Road, Widows Homes)	Flood protection & erosion
Clickimin Roundabout	Flood protection
Sletts	Flood protection
Breiwick (west, north, & east)	Flood protection
Scottish Water pumping station, Twageos	Protection of infrastructure
South Commercial Street (Dukes Neb, Sea Scouts, Quendale House, & Queens Beach)	Flood protection & erosion
North Ness	Flood protection & erosion
Outside Skippidock harbour	Flood protection & erosion
Lerwick power station	Erosion
Arlanda, Shetland Catch	Port structures
Lerwick Harbour Trust laydown area (Greenhead)	Port structures
Scalloway (Mill Brae, Youth Centre, Main Street car park, Fisheries College)	Erosion & flood protection

Burn Beach	Flood protection
Kiln Cottage	Flood protection
Shetland Bus Memorial	Flood protection
Port Arthur	Flood protection
Dales Voe Pier	Port structures

PVA 02/04/04 - Summary of existing local actions to manage risk	
Location of Structure	**Purpose of Structure**
Mid Yell graveyard wall	Erosion at end of existing armour

Annex 1: Shetland LFRMP Actions

The Act requires Scottish Government to have regard to the Strategy and Local Flood Risk Management Plan when allocating funding to SEPA and Responsible Authorities. The delivery of the above actions in the second Flood Risk Management Plan cycle from 20222028, as detailed in the Local Flood Risk Management Plan, is therefore subject to revenue and capital funding allocations from Scottish Government to SEPA and Responsible Authorities; and to revenue and capital budget setting by councils and other Responsible Authorities over the period 2022-2028.

LPD-wide / PVA	Selected Action	Location	Objective	Description	Coordination	Funding	Proposed lead responsible authority	Proposed delivery period
PVA 02/04/01	Vidlin Flood Protection Study (36901)	Vidlin coastal area	An understanding of flood risk and associated issues in the area is to be developed involving surveys and wave modelling and will consider the impacts of climate change on flood risk. Where flood risk is confirmed, a range of possible options to manage flood risk are to be identified and a preferred approach is to be chosen, including adaptive planning to allow for the impacts of climate change to be monitored, understood and managed. The work will focus on the road causeway - the current issues of wave and spray, and changes that future sea level rise could bring to those existing problems, as well as the new problems that could be created.	A flood study is needed to assess future still water flood levels relative to the road causeway. Climate change is expected to cause rising sea levels and changes to storm patterns. This could lead to flooding or issues of wave and spray breaking over the road happening more often. It is important to plan for this and ensure future risk to communities and infrastructure is managed appropriately. The need for an adaptation plan should be assessed, as that may help assess how a phased series of works could be used to give appropriate protection during long term changes.	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised. The survey and study will be carried out after discussion with SEPA hydrologists to ensure the information is as useful and relevant as possible. Results may help to inform future revisions of SEPA's flood maps	Initial scoping will be carried out under existing council budgets. Survey, modelling and design work would be funded if the works receive funding through the Council's Capital Programme.	Shetland Islands Council	Outline work in 2023-24, with any resulting further work then subject to prioritisation and funding
PVA 02/04/02	Walls Adaptation Plan (36801)	Walls coastal area	Information on climate change is to be used to develop an adaptation plan to allow for the impacts of climate change to be monitored, understood and managed. Initial ground level survey work carried out in cycle 1 has given an understanding of flood risk to buildings in the area, and broadly shows buildings becoming at risk with any rise in sea levels from climate change. Where flood risk is confirmed, a range of possible options to manage flood risk are to be identified and a preferred approach is to be chosen, including adaptive planning to allow for the impacts of climate change to be monitored, understood and managed. The buildings at risk are spread around a significant length of coast and so an approach focused on each building individually will be needed.	An adaptation plan should be developed based on the previous cycle 1 works carried out to look at existing ground levels. Climate change will cause rising sea levels and changes to storm patterns. This would lead to both higher base coastal flood levels, as well as more intense wave run up effects and the potential for great errosion. In general, flooding happening more often. It is important to plan for these longer term changes with a phased arroach of actions based on the ongoing changes in risk, in order to ensure there is a balanced and planned approach to managing risk to communities and infrastructure.	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised. The Adaption Plan process is still to be clarified, including the duration, scale and lead bodies.	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC	Shetland Islands Council	Outline work in 2023-24, with any resulting further work then subject to prioritisation and funding
PVA 02/04/03	Lerwick Surface Water Management Plan (38301)	Lerwick South Burn of Gremista catchment	Areas at risk of heavy or prolonged rainfall causing flooding due to water ponding where culverts limit the burn dischargesand/or cause the drainage systems to be overwhelmed have been identified. The next steps in managing such water ponding or over-whelmed drainage systems have been identified and possible approaches to implementing these will be developed. The plan is to be reviewed and updated as needed.	Existing flood risks are known from historical incidents on the South Burn of Gremista in Lerwick and are related to undersized burn culverts. In cycle 1 there was an expectaton that redevelopment of the Lerwick powerstation site was likely and would give oppertunities to decuivert the lower part of the burn and make a significant difference to flood risk there. Events have taken a different course, and the power station site remains in use. Studies by SIC and also as part of other development in the area have produced consistent results in forecasting flood volumes at different levels of risk and future work will now look at options to make changes to burn and sewer flows to try and minimise risks. Ownership of burn culverts is spread over a range of Council, Private and 3rd party bodies, and cooperation in approach and funding would need to be agreed.	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised.	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC	Shetland Islands Council	Heavily dependant on external factors
PVA 02/04/03	Scalloway Surface Water Management Plan (44201)	Scalloway Burn Beach	Areas at risk of heavy or prolonged rainfall causing flooding due to surface water run off overloading drainage systems when combined with tidal effects have been identified. The next steps in managing such water ponding or over-whelmed drainage systems have been identified and possible approaches to implementing these will be developed. The plan is to be reviewed and updated as needed.	Existing flood risks are known from historical incidents where combinations of rainfall and highttide lead to overflows in the surface water drainage at the Burn Beach outfall. Information has been gathered in cycle 1 on coastal ground levels and on the drainage networks contributing to the burn and an outline proposals for an overflow culvert has been considered. The Scalloway Place Plan has also produced potential future projects and improvements in the area, which mayimpact on, or form contributing parts to, the drainage works which could be considred. In cycle 2 the aim will be to draw together the different potential changes being considered, and their funding streams, in a way that best helps give a sustainable range of actions to address or mitigate the flood risks at Burn Beach.	There are identified flood risks at locations involving Council, Scottish Water and third party properties and drainage infrastructure. SIC will lead the investigation of the catchments, but consideration of options and future work leading on from that will involve a wide range of groups.	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC	Shetland Islands Council	Works streams may potentially run during the whole 2022-28 cycle
PVA 02/04/03	Scalloway Shoreline Management Plan (Coastal Adaptive Plan) (44202)	Scalloway developed shoriine	The ground level information gathered in cycle 1 is sufficient to show that coastal flood risk of buildings will increase with future sea level rises. An assessment of coastal flood and erosion risks created at various levels of long term sea level change is to be carried out. The plan should include assessment of climate change and develop adaptive approaches to allow for the impacts of climate change to be monitored, understood and managed.	A shoreline management plan should be developed. This should review the existing coastal defences and assess future implications of the protection provided as sea levels rise. It is important to plan for this and ensure future risk to communities and infrastructure is managed appropriately. The need for an adaptation plan should be assessed, as that may help assess how a phased series of works could be used to give appropriate protection during long term changes. The plan will be integrated with the surface water management plan and Scalloway Local Place Plan, to give a better appreciation of connected factors	The action delivery lead is Shetland Islands Council and coordination will be determined once the actions have been finalised.	Initial Council delivery of this action will be covered under existing revenue budgets. Longer term processes TBC	Shetland Islands Council	Works streams may potentially run during the whole 2022-28 cycle
PVA 02/04/03	Cunningsburgh Flood scheme implimentation (44801)	Cunningsburgh - North bridge	The site survey work carried out in cycle 1 is sufficient to outline protection works thart could be carried out to reduce flood risk. The flood works will be submitted for possible SIC capital funding, and designed, developed and built if funding is given.	The A970 is the key road linking the southern end of the mainland, including the airport at Sumburgh, to the rest of Shetland. Flooding in the Cunningsburgh area causes significant disruption to residents, commuters, and visitors. An outline study was carried out in cycle 1 looking at options at the A970 North bridge - Burn of Laxdale culvert. Flood risk could be reduced by forming a bund at the west burn bank, to allow greater surcharging of the existing culvert before overflows occur, and by adding a large grating with an overflow culvert under the A970 west of the main culvert, to help allow ponding water to be drained before the depth builds up to the extent of causing flooding to property.	The action delivery lead is Shetland Islands Council.	Initial Council delivery of this action will be covered under existing revenue budgets. Construction of the scheme would depend on SIC Capital Programme funding being awarded.	Shetland Islands Council	Capital funding application in 2023-24, with works timescales then subject to prioritisation and funding
PVA 02/04/04	Cullivoe Flood scheme design (38801)	Stonganess	Proposals to build a new length of realigned road are intended to be built as part of the new Cullivoe Road scheme, which currently has funding as part of the SIC capital programme.	A design for a new road alignments being progressed as part of the Cullivoe Road improvement scheme, and has a scope that would allow the flood risk on the existing road to be addressed. The proposed levels meet the 1 in 200 year (0.5% annual exceedance probability) standard of protection plus climate change. In accordance with the flood risk management plan, as part of the scheme or works, the responsible authority should aim to ensure that the action will not have an adverse effect on the integrity of the Bluemull and Colgrave Sounds Special Protection Area.	The action delivery lead is Shetland Islands Council.	There is existing funding for design of the proposals.	Shetland Islands Council	Design will be completed in the 2022-28 cycle
PVA 02/04/04	Cullivoe Flood scheme implimentation (38802)	Stonganess	Proposals to build a new length of realignedroad are intended to be built as part of the new Cullivoe Road scheme, which currently has funding as part of the SIC capital programme.	Construction of the new road alingment alignment is expected to be carried out as part of the Cullivoe Road improvement scheme. The design addresses flood risk to the 1 in 200 year + climate change level of risk, which is sufficient for the lifetime of the road.	The action delivery lead is Shetland Islands Council. SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD.	Construction of the scheme would depend on SIC Capital Programme funding being awarded.	Shetland Islands Council	Construction is currently expected to be completed in the 2022-28 cycle

LPD-wide / PVA	Selected Action	Location	Objective	Description	Coordination	Funding	Proposed lead responsible authority	Proposed delivery period
PVA 02/04/04	Cullivoe Flood scheme implmentation (38802)	Stonganess	Proposals to build a new length of realignedroad are intended to be built as part of the new Cullivoe Road scheme, which currently has funding as part of the SIC capital programme	Construction of the new road alingment alignment is expected to be carried out as part of the Cullivoe Road improvement scheme. The design addresses flood risk to the 1 in 200 year + climate change level of risk, which is sufficient for the lifetime of the road	The action delivery lead is Shetland Islands Council SEPA will work with the local authority on the potential to coordinate this action with an update to SFDAD	Construction of the scheme would depend on SIC Capital Programme funding being awarded	Shetland Islands Council	Construction is currently expected to be completed in the 2022-28 cycle
PVA 02/04/04	Cullivoe Community engagement (38803)		Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk.	The responsible authorities to continue to engage with the community The reduction in flood risk to the road connection which the bridge replacement and road raising works will provide to the wider community will be highlighted The remaining flood risk to buildings in the area, and the need to be aware of flood warnings will also be covered The risk of coastal flooding in the area appears to be more frequent than earlier flood warning predictions indicated, and this local aspect of the flood prediction modelling should be addressed	The action delivery lead is Shetland Islands Council	Initial Council delivery of this action will be covered under existing revenue budgets Longer term processes TBC	Shetland Islands Council	TBC – The type and level of risk remaining to highlight will depend on the scheme as designed and built.
PVA 02/04/04	Cullivoe Property flood resilience scheme (38804)		The remaining coastal flood risk to properties may be able to be reduced by providing resilience measures against flooding for individual buildings.	Any residual flood risk to buildings that remains after the new road alignment works have been carried out may be able to be managed or reduced with property flood resilience.	The action delivery lead is Shetland Islands Council	Initial Council delivery of this action will be covered under existing revenue budgets Longer term processes TBC	Shetland Islands Council	TBC – The type and level of risk remaining to highlight will depend on the scheme as designed and built.
LPD Wide	Awareness Raising	LPD Wide	Reduce overall flood risk	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. Scottish Water will support SEPA and Responsible Authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities.	The Shetland Islands Council, SEPA and Scottish Water will co-ordinate awareness raising activities with other Responsible Authorities, through the regular Local Plan District Partnerships and Flood Risk Management Local Area Group meetings. More information on the roles of these groups is given in Annex 3	Council involvement is funded from existing SIC revenue budgets SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.	Shetland Islands Council and SEPA	On-going
LPD Wide	Data to support climate resilience	LPD Wide	Reduce overall flood risk	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. 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. SEPA will support research and development of data, methods and	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	2022-2026
LPD Wide	Emergency Plans	LPD Wide	Reduce overall flood risk	Many organisations, including local authorities, the emergency services and SEPA provide an emergency response to flooding. Emergency plans are prepared and maintained under the Civil Contingencies Act 2004 by Category 1 and 2 Responders and are coordinated through regional and local resilience partnerships, often supported by voluntary organisations. They set out the steps to be taken to maximise safety and minimise impacts during flooding. Emergency plans may also be prepared by individuals, businesses, organisations or communities. Scottish Water is a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.	The Shetland Islands Council have a Major Emergency Plan which is a generic contingency plan to enable the Council's response to a major emergency.	Emergency Planning and other Council service actions are funded from existing SIC revenue budgets	Category 1 and 2 Responders	On-going
LPD Wide	Flood Forecasting	LPD Wide	Reduce overall flood risk	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. 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.	SEPA work in partnership with the Met Office and will work closely with all other authorities involved in emergency response to flooding. Warnings received are circulated to the Council's Severe Weather email list as it the possibilty of flooding is usually linked to high winds in a particular direction together with high tides / storm surge.	SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government. Existing SIC revenue budgets	Scottish Flood Forecasting Service	On-going
LPD Wide	Flood warning development framework	LPD Wide	Reduce overall flood risk	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. 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. 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. 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.	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	2022-2028

LPD-wide / PVA	Selected Action	Location	Objective	Description	Coordination	Funding	Proposed lead responsible authority	Proposed delivery period
LPD Wide	Future flood risk management planning	LPD Wide	Reduce overall flood risk	The years covered by the lifetime of this plan are crucial. Radical progress is needed in how we reduce our impact on the climate and respond to the effects of climate change. How we plan to manage flooding to our communities is on the front line of the challenges of this decade. The 2027 flood risk management plans will be more ambitious than ever before. The plans will look to develop long term plans for more flood resilient communities prepared for the impacts of climate change. 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. SEPA has set its own target to be a regenerative organisation by 2030 and the next set of plans will further this ambition. 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.	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	Ongoing / 2022-2028 Flooding services strategy 2023 Next flood risk management plans 2027
LPD Wide	Guidance development	LPD Wide	Reduce overall flood risk	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. Technical guidance to support flood risk management partners will be reviewed and updated by SEPA where required. Scottish Forestry, in collaboration with its UK counterparts, will produce guidance on designing and managing forests to reduce flood risk. 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.	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	Scottish Government, SEPA, Scottish forestry	Draft flood studies guidance (SEPA) 2023 Options appraisal & Adaptation guidance (SG & SEPA) 2023 Other guidance & updates 2023-2028
LPD Wide	Hazard mapping updates	LPD Wide	Reduce overall flood risk	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. https://www.sepa.org.uk/environment/water/flooding/flood-maps/. 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.	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	2022-2028
LPD Wide	Land use planning	LPD Wide	Avoid an overall increase in flood risk Reduce overall flood risk	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land, in terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. Areas in Shetland identified for development in the Local Development Plan have had initial flood risk assessments carried out as part of their consideration. Applications for developments have requirements to address flooding and drainage in a suitable way, and a local Supplementary Guidance document gives advice. Applications which fall under the 5m contour (for coastal flood risk) or within the 1 in 200 year flood risk areas on SEPA's flood maps (for surface water and river flood risks) are required to provide more detail to confirm the flood risks have been considered and dealt with. SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website http://www.sepa.org.uk/environment/land/planning/ Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by Shetland Islands Council. Consider where may be a risk of flooding. SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website http://www.sepa.org.uk/environment/land/planning/ Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by Shetland Islands Council.	Production of the Shetland Local Development Plan and specifically the "Call for Sites" process included a multi-stage consultation with public and other stakeholders. There are consultations with Council and Non-Council stakeholders as part of consideration of planning applications. SEPA's land use planning activities will be co-ordinated with the activities of other Responsible Authorities as required.	Development Planning and other Council service input funded from existing revenue budgets. SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.	Shetland Islands Council and SEPA	On-going

LPD-wide / PVA	Selected Action	Location	Objective	Description	Coordination	Funding	Proposed lead responsible authority	Proposed delivery period
LPD Wide	Maintenance	LPD Wide	Reduce overall flood risk	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.	Shetland Islands Council will publish a schedule of planned watercourse inspection, clearance and repair works. Awareness of third party works impacts on watercourses or flood protection infrastructure will be raised with authorities through the required planning permission and/or other required licensing processes and discussions at LPDP and FLAG group meetings. Scottish Water will keep Responsible Authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.	Roads Service inspections are funded from existing SIC revenue budgets	Shetland Islands Council	On-going
LPD Wide	Natural flood management mapping	LPD Wide	Reduce overall flood risk	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.	SEPA will work with key stakeholders to review and update the opportunities mapping.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	2025
LPD Wide	National flood risk assessment	LPD Wide	Reduce overall flood risk	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.	SEPA will work with others as the NFRA is updated, including to keep other responsible authorities informed through the Local Plan District Partnerships.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	December 2024
LPD Wide	National surface water mapping	LPD Wide	Reduce overall flood risk	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 wholescale update of the national surface water maps to reflect developments in data and understanding, including the impact of climate change.	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	2024
LPD Wide	Reservoirs	LPD Wide	Reduce overall flood risk	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.	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	Ongoing / 2022-2028 Flood warning developments 2022-2024
LPD Wide	Scottish Flood Defence Asset Database	LPD Wide	Reduce overall flood risk	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.	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.	SEPA's role in this action is funded by Scottish Government through SEPA's grant in aid settlement.	SEPA	2022-2028
LPD Wide	Self Help	LPD Wide	Reduce overall flood risk	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: https://www.floodre.co.uk/ https://www.biba.org.uk/current-issues/flood-insurance/ https://floodlinescotland.org.uk/ https://scottishfloodforum.org/ 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.	Where premises are subject to historical flooding the owners are aware of their responsibilities and that flood damage can be reduced by suitable provision and maintenance of drainage and flood protection infrastructure, including property level protection.	General information is made available as part of existing Shetland Islands Council awareness raising activities. There are no existing specific Council budgets for funding self help works.	Everyone	On-going

Annex 2: Consultation and engagement

The national Flood Risk Management Plan and the Local Flood Risk Management Plan (LFRMP) have been drawn up as part of a long term process of collaborative working involving many different groups, as outlined below.

Local Plan District Partnership (LPDP)

This is a working group of SIC, SEPA and Scottish Water officers, whose primary function to this date has been preparing input and reviewing local aspects of firstly the national set of plan documents and then this resulting LFRMP.

Membership:

SIC	Elected member
	Planning, Roads and Emergency Planning officers
SEPA	Local and Area officers
Scottish Water	Local and Area officers

Flood Risk Management Local Advisory Group (FRM LAG)

This is a wider working group of interested parties overseeing flooding actions and monitoring. The FRM LAG group has had regular progress reports on the work of the LPDP groups work on the national set of plan and the LFRMP and there is a significant crossover in membership of the two groups.

Membership:

SEPA	Local and Area officers
SIC	Elected members, Planning, Roads and Emergency Planning officers
Scottish Water	Local and Area officers

Lerwick Port Authority
Hjaltland Housing Association
Shetland Amenity Trust
RSPB
Nature Scot

Flood Risk Management Plan

As part of producing the National set of plan there were different overlapping streams of national and local, public and authority reporting and consultation.

SEPA produced a national publicity campaign leading up to their public consultation process on the draft National set of plan which ran from August to October 2021.

Shetland Councillors and Community Councils also received a briefing note on the consultation and printed copies of the draft National set of plan were made available to the public.

Local Flood Risk Management Plan (LFRMP)

This LFRMP looks at how to deliver the recommended actions from the national set of plan, adding local detail and more information on scheduling, coordination and funding.

A report was presented to the SIC Development committee in November 2022 updating members of the progress towards producing the draft LFRMP after publication of the National set of plan. Members approved the draft Plan for publication as the Shetland LFRMP.

Future Engagement

There will be ongoing engagement both with raising public awareness of the Plan and its approaches to managing or reducing flood risk and as part of the process of preparing for the update cycle of the LFRMP after 2028.

Annex 3: Links to other plans, policies, strategies and legislative requirements

1. Strategic Environmental Assessment (SEA)

After wider consultation it is considered that the SEA requirements for the LFRMP have already been addressed in the SEA process carried out by SEPA during production of the National Flood Management Plan. A document outlining the reasons for this decision is available at http://www.shetland.gov.uk/planning/documents/ShetlandLFRMPSEAstatement.pdf

2. Habitat Regulations Appraisal (HRA)

Shetland Islands Council, as the Responsible Authority, considers that the LFRMP will not have a likely significant environmental effect on the conservation objectives or integrity of the identified SAC and SPA sites, and therefore do not consider that an appropriate assessment is required. An HRA document for the LFRMP is available at http://www.shetland.gov.uk/planning/documents/ShetlandLFRMPHRA.pdf

3. Shetland Flood Risk Management Plan

This forms part of the national set of plans published by SEPA in December https://www2.sepa.org.uk/frmplans/documents/lpd4-shetland-frmp-2021.pdf

4. River Basin management Planning (RBMP)

SEPA RBMP portal
http://www.sepa.org.uk/environment/water/river-basin-management-planning/

RBMP for the Scotland river basin district – summary document
https://www.sepa.org.uk/media/594088/211222-final-rbmp3-scotland.pdf

5. Scottish Water

Information on Scottish Water's strategic investment will be updated on their website at https://www.scottishwater.co.uk/

6. S18 Schedule of Clearance and Repair

The Shetland Islands Council's schedule of clearance and repair under Section 18 of the Flood Risk Management (Scotland) Act 2009 is available at http://www.shetland.gov.uk/planning/documents/ShetlandLFRMPS18.pdf

7. Shetland Local Development Plan

The Shetland Local Development Plan and associated supplementary guidance documents are available at http://www.shetland.gov.uk/planning/LocalDevelopmentPlan.asp.

Annex 4: Licensing information

The information described in this Annex relates to the Figures and Maps that have been generated by SEPA and have been reproduced in this Local Plan from the Shetland section of the national Flood Risk Management Plan. The Shetland Local Plan District Partners gratefully acknowledges the cooperation and input that various parties have provided, including inter alia, the following organisations:

SEPA
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Local authorities
Shetland Islands Council 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
Shetland Islands Council acknowledges the inclusion of surface water flooding data generated by Scottish Water in preparation of flood risk information.

The Flood Hazard Research Centre
Multi-coloured Manual and Multi-coloured Handbook 2016.

All contributors to the 2018 NFRA
More information on which can be found at https://www.sepa.org.uk/data-visualisation/nfra2018/

Glossary

Actions
Actions describe where and how flood risk will be managed. These actions have been set by SEPA and agreed with flood risk management authorities following consultation. Selection of actions to deliver the agreed objectives has been based on a detailed assessment and comparison of economic, social and environmental criteria.

Appraisal
Appraisal is the process of defining objectives, examining options and weighing up the costs, benefits, risks and uncertainties before a decision is made. The FRM Strategy appraisal method is designed to set objectives and identify the most sustainable combination of actions to tackle flooding from rivers, sea and surface water.

Awareness raising
Public awareness, participation and community support are essential components of sustainable flood risk management. SEPA and the Responsible Authorities have a duty to raise public awareness of flood risk. This is undertaken both individually and collaboratively by a range of organisations. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.

Catchment
All the land drained by a river and its tributaries.

Category 1 and 2 Responders (Cat 1/2)
Category 1 and 2 Responders are defined as part of the Civil Contingencies Act 2004 which seeks to minimise disruption in the event of an emergency.
Category 1 Responders are 'core' responders: local authorities, police, fire and rescue services, ambulance service, NHS health boards, SEPA and the Maritime and Coastguard Agency.
Category 2 Responders are key co-operating responders in support of Category 1 Responders. These include gas and electricity companies, rail and air transport operators, harbour authorities, telecommunications providers, Scottish Water, the Health and Safety Executive and NHS National Services Scotland.

Characterisation
Provides a description of the natural characteristics of catchments, coastlines and urban areas in terms of hydrology, geomorphology, topography and land use. It also includes the characterisation of existing levels of flood risk and existing flood risk management activity.

Coastal flooding
Flooding that results from high sea levels or a combination of high sea levels and stormy conditions. The term coastal flooding is used under the Flood Risk Management (Scotland) Act 2009, but in some areas it is also referred to as tidal flooding and covers areas such as estuaries and river channels that are influenced by tidal flows.

Combined sewer
Combined sewers transport sewage from homes and industry as well as carrying surface water runoff from gutters, drains and some highways. Heavy or prolonged rainfall can rapidly increase the flow in a combined sewer until the amount of water exceeds sewer capacity.

Combined sewer (overflow) (CSO)
Combined sewer overflows are purposely designed structures to ensure any excess water from sewerage systems is discharged in a controlled way and at a specific managed location.

Community facility
Within the FRM Strategies this term includes: Emergency Services (Police, Fire, Ambulance, And Coastguard) Educational Buildings (crèche, nursery, primary, secondary, further, higher and special education premises) Healthcare facilities: hospitals, health centres and residential care homes

Community flood action groups
Community flood action groups are community based resilience groups which, on behalf of local residents and business, help to prepare for and minimise the effects of flooding. They reflect the interests of their local communities and may differ in composition and remit. There are over 60 groups already established in Scotland. The Scottish Flood Forum provides support for both new and existing groups.

Conveyance
Conveyance is a measure of the carrying capacity of a watercourse. Increasing conveyance enables flow to pass more rapidly and reducing conveyance slows flow down. Both actions can be effective in managing flood risk depending on local conditions.

Cultural heritage site
Historic Environment Scotland maintains lists of buildings of special architectural or historic interest; these buildings are referred to as 'listed buildings'. The highest level of designation is a World Heritage Site. Other designations included in this assessment are scheduled monuments, gardens and designed landscapes, and battlefields.

Culvert
A pipe, channel or tunnel used for the conveyance of a watercourse or surface drainage water under a road, railway, canal or other obstacle.

Damages
Flood damages are categorised as direct or indirect i.e. as a result of the flood water itself, or subsequent knock on effects. Damage to buildings and contents caused by flood water are an example of direct damages, whilst loss of industrial production, travel disruption or stress and anxiety are indirect. Some damages can be quantified in monetary terms, and others can only be described. The potential damages avoided by implementation of a flood risk management action are commonly referred to as the benefits of that action. When comparing the effectiveness of different actions, it is useful to consider estimated damages and damages avoided across the lifespan of the action. Within the FRM Strategies, a 100 year appraisal period has been used as

standard. This allows costs, damages and benefits across this time frame to be compared in present value terms.
See also 'Annual Average Damages'

Economic impact
An assessment of the economic value of the positive and negative effects of flooding and / or the actions taken to manage floods. Embankment Flood embankments are engineered earthfill structures designed to contain high river levels or protect against coastal flooding. They are commonly grass-covered, but may need additional protection against erosion by swiftly flowing water, waves or overtopping.

Emergency plans / response
Emergency response plans are applicable for all types of flooding. They set out the steps to be taken during flooding in order to maximise safety and minimise impacts where possible. Under the Civil Contingencies Act, Category 1 Responders have a duty to maintain emergency plans. Emergency plans may also be prepared by individuals, businesses, organisations or communities.

Environmental impact
A change in the environment as a result of an action or activity. Impacts can be positive or negative and may vary in significance, scale and duration.

Environmental Impact Assessment (EIA)
Environmental Impact Assessment (EIA) is a process which identifies the potential environmental impacts, both negative and positive, of a proposal.

Environmental sites / environmental designated areas / environmentally designated sites
Areas formally designated for environmental importance, such as Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA) or Special Areas of Conservation (SAC).

Erosion
A natural process leading to the removal of sediment from a river bed, bank or floodplain or coastline.

Flash flood
A flood that occurs a short period of time after high intensity rainfall or a sudden snow melt. A sudden increase in the level and velocity of the water body is often characteristic of these events, leaving a short time for warning or actions.

Flood
In the terms of the FRM Act, 'flood' means a temporary covering by water, from any source, of land not normally covered by water. This does not include a flood solely from a sewerage system, as a result of normal weather or infrastructure drainage. A flood can cause significant adverse impacts on people, property and the environment.

Flood bund
A constructed retaining wall, embankment or dyke designed to protect against flooding to a specified standard of protection. Flood defence Infrastructure, such as flood walls, embankments or flood storage intended to protect an area against flooding to a specified standard of protection.

Flood extent
The area that has been affected by flooding, or is at risk of flooding from one or more sources for a particular likelihood.

Flood forecasting
SEPA operates a network of over 250 rainfall, river and coastal monitoring stations throughout Scotland that generate data 24 hours a day. This hydrological information is combined with meteorological information from the Met Office. A team of experts then predict the likelihood and timing of river, coastal and surface water flooding. This joint initiative between SEPA and the Met Office forms the Scottish Flood Forecasting Service.

Flood frequency
The probability that a particular size/severity of flood will occur in a given year (see likelihood).

Flood gate
An adjustable, sometimes temporary, barrier used as a flood defence to control the flow of water within a water system or during a flood. Flood gates can also be part of operational flood defences or protect individual buildings or sites.

Flood guard
Flood guards cover a variety of types of door and window barriers that can be fitted to individual properties and operated by the owners / occupiers prior to a flood event. They act as a physical barrier to water entering the property and can provide protection against frequent and relatively shallow flooding.

Flood hazard
In terms of the FRM Act, hazard refers to the characteristics (extent, depth, velocity) of a flood.

Flood hazard map
Flood hazard maps are required by the FRM Act to show information that describes the nature of a flood in terms of the source, extent, water level or depth and, where appropriate, velocity of water. Flood hazard and risk maps are referred to collectively as flood maps and are available on the SEPA website.

Flood Prevention Scheme / Flood Protection Scheme (FPS)
A flood protection scheme, as defined by the FRM Act, is a scheme by a local authority for the management of flood risk within the authority area. This includes defence measures (flood prevention schemes) formerly promoted under the Flood Prevention (Scotland) Act 1961.

Flood protection study
Flood protection studies aim to refine understanding of the hazard and risk associated with flooding in a particular area, catchment or coastline. They will involve detailed assessment of flood hazard and / or risk and may develop options for managing flood risk.

Flood protection works
Flood protection works can include the same flood defence measures that would make up a formal Flood Protection Scheme but without the legal process, protections and requirements that would come by delivering the works as a scheme.

Flood risk
A measure of the combination of the likelihood of flooding occurring and the associated impacts on people, the economy and the environment.

Flood Risk Assessment (FRA)
Flood Risk Assessments are detailed studies of an area where flood risk may be present. These are often used to inform planning decisions, may help to develop flood schemes and have also contributed to the National Flood Risk Assessment.

Flood Risk Management (Scotland) Act 2009 (FRM Act)
The flood risk management legislation for Scotland. It transposes the EC Floods Directive into Scots Law and aims to reduce the adverse consequences of flooding on communities, the environment, cultural heritage and economic activity.

Flood risk management cycle
Under the FRM Act flood risk management planning is undertaken in six year cycles. The second planning cycle is 2021 – 2027. The second delivery cycle is lagged by approximately 6 months and is from 2022 - 2028.

Flood Prevention (Scotland) Act 1961
The Flood Prevention (Scotland) Act 1961 gave local authorities discretionary powers to make and build flood prevention schemes. It was superseded by the Flood Risk Management (Scotland) Act 2009.

Flood Risk Management Local Advisory Groups
FRM Local Advisory Groups are stakeholder groups convened to advise SEPA and lead local authorities in the preparation of Flood Risk Management Plans. SEPA and lead local authorities must have regard to the advice they provide.

Flood Risk Management Plans (FRM Plans)
A term used in the FRM Act. FRM Plans set out the actions that will be taken to reduce flood risk in a Local Plan District. They comprise the national Flood Risk Management Plans, developed by SEPA, and Local Flood Risk Management Plans produced by lead local authorities.

Flood Risk Management Plan
Sets out a national long-term vision for the overall reduction of flood risk. They contain a summary of flood risk in each Local Plan District, together with information on catchment characteristics and a summary of objectives and actions for Potentially Vulnerable Areas Flood risk map complements the flood hazard maps published on the SEPA website providing detail on the impacts of flooding on people, the economy and the environment. Flood hazard and risk maps are referred to collectively as flood maps and are available on the SEPA website.

Flood wall
A flood defence feature used to defend an area from flood water to a specified standard of protection.

Flood Warning area (FWA)
A Flood Warning area is where SEPA operates a formal Flood Monitoring Scheme to issue targeted Flood Warning messages for properties located in the area.

Flood warning scheme
A flood warning scheme is the network of monitoring on a coastal stretch or river, which provides SEPA with the ability to issue Flood Warnings.

Floods Directive
European Directive 2007/60/EC on the Assessment and Management of Flood Risks builds on and is closely related to the Water Framework Directive (see River Basin Management Planning). It was transposed into Scots Law by the Flood Risk Management (Scotland) Act 2009. The Directive requires Member States to assess if all watercourses and coastlines are at risk from flooding, to map the flood extent, assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk.

Floodplain
Area of land that borders a watercourse, an estuary or the sea, over which water flows in time of flood, or would naturally flow but for the presence of flood defences and other structures where they exist.

Green infrastructure
The European Commission defines green infrastructure as “the use of ecosystems, green spaces and water in strategic land use planning to deliver environmental and quality of life benefits. It includes parks, open spaces, playing fields, woodlands, wetlands, road verges, allotments and private gardens. Green infrastructure can contribute to climate change mitigation and adaptation, natural disaster risk mitigation, protection against flooding and erosion as well as biodiversity conservation.”

Groundwater flooding
This type of flooding is caused by water rising up from underlying rocks or flowing from springs. In Scotland groundwater is generally a contributing factor to flooding rather than the primary source.

Land use planning (LUP)
The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic, social and environmental objectives and the implications for different communities and interest groups.

Lead Local Authority
A local authority responsible for leading the production, consultation, publication and review of a Local Flood Risk Management Plan.

Likelihood of flooding
The chance of flooding occurring.

High likelihood: A flood is likely to occur in the defined area on average once in every ten years (1:10). Or a 10% chance of happening in any one year.

Medium likelihood: A flood is likely to occur in the defined area on average once in every two hundred years (1:200). Or a 0.5% chance of happening in any one year.

Low likelihood: A flood is likely to occur in the defined area on average once in every thousand years (1:1000). Or a 0.1% chance of happening in any one year.

Local Flood Risk Management Plans (LFRMP)
Local Flood Risk Management Plans, produced by lead local authorities, will take forward the objectives and actions set out in Flood Risk Management Strategies. They will provide detail on the funding, timeline of delivery, arrangements and co-ordination of actions at the local level during each six year FRM planning cycle.

Local Plan District
Geographical areas for the purposes of flood risk management planning. There are 14 Local Plan Districts in Scotland.

Local Plan District Partnerships
Each LPD has established a local partnership comprised of local authorities, SEPA, Scottish Water and others as appropriate. These partnerships are distinct from the FRM Local Advisory Groups and they retain clear responsibility for delivery of the FRM actions set out in the Local Flood Risk Management Plans. It is the local partnership that makes decisions and supports the delivery of these plans.

Maintenance
Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009 put duties of watercourse inspection, clearance and repair on local authorities. In addition, local authorities may also be responsible for maintenance of existing flood protection schemes or defences.

National Flood Management Advisory Group (NFMAG)
The National Flood Management Advisory Group provides advice and support to SEPA and, where required, Scottish Water, local authorities and other Responsible Authorities on the production of FRM Strategies and Local FRM Plans.

National Flood Risk Assessment (NFRA)
A national analysis of flood risk from all sources of flooding which also considers climate change impacts. Completed in December 2011 this provides the information required to undertake a strategic approach to flood management that identifies areas at flood risk that require further appraisal. The NFRA will be reviewed and updated for the second cycle of FRM Planning by December 2018.

Natural flood management (NFM)
A set of flood management techniques that aim to work with natural processes (or nature) to manage flood risk.

Non-residential properties
Properties that are not used for people to live in, such as shops or other public, commercial or industrial buildings.

Objectives
Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding.

One in 200 year flood
See 'likelihood of flooding' and 'return period'.

Planning policies
Current national set of planning policies, Scottish Planning Policy and accompanying Planning Advice notes restrict development within the floodplain and limit exposure of new receptors to flood risk. In addition to national policies, local planning policies may place further requirements within their area of operation to restrict inappropriate development and prevent unacceptable risk.

Potentially Vulnerable Areas (PVA)
Catchments identified as being at risk of flooding and where the impact of flooding is sufficient to justify further assessment and appraisal. There were 243 PVAs identified by SEPA in the National Flood Risk Assessment and these are the focus of the first FRM planning cycle.

Property level protection
Property level protection includes flood gates, sandbags and other temporary barriers that can be used to prevent water from entering individual properties during a flood.

Resilience
The ability of an individual, community or system to recover from flooding.

Responsible Authority
Designated under the FRM (Scotland) Act 2009 and associated legislation as local authorities, Scottish Water and, from 21 December 2013, the National Park Authorities and Forestry Commission Scotland. Responsible Authorities, along with SEPA and Scottish Ministers, have specific duties in relation to their flood risk related

functions.

Return period
A measure of the rarity of a flood event. It is the statistical average length of time separating flood events of a similar size. (See likelihood)

Riparian
The riparian area is the interface between land and a river or stream. For the purposes of FRM this commonly refers to the riparian owner, which denotes ownership of the land area beside a river or stream.

River Basin Management Planning (RBMP)
The Water Environment and Water Services (Scotland) Act 2003 transposed the European Water Framework Directive into Scots law. The Act created the River Basin Management Planning process to achieve environmental improvements to protect and improve our water environment. It also provided the framework for regulations to control the negative impacts of all activities likely to have an impact on the water environment.

Scottish Advisory and Implementation Forum for Flooding (SAIFF)
The stakeholder forum on flooding set up by the Scottish Government to ensure legislative and policy aims are met and to provide a platform for sharing expertise and developing common aspirations and approaches to reducing the impact of flooding on Scotland's communities, environment, cultural heritage and economy.

Self help
Self help actions can be undertaken by any individuals, businesses, organisations or communities at risk of flooding. They are applicable to all sources, frequency and scales of flooding. They focus on awareness raising and understanding of flood risk.

Sewer flooding (and other artificial drainage system flooding)
Flooding as a result of the sewer or other artificial drainage system (e.g. road drainage) capacity being exceeded by rainfall runoff or when the drainage system cannot discharge water at the outfall due to high water levels (river and sea levels) in receiving waters.

Site protection plans
Site protection plans are developed to identify whether normal operation of a facility can be maintained during a flood. This may be due to existing protection or resilience of the facility or the network.

Shoreline Management Plan (SMP)
A Shoreline Management Plan is a large scale assessment of the coastal flood and erosion risks to people and the developed, historic and natural environment. It sets out a long-term framework for the management of these risks in a sustainable manner.

Site of Special Scientific Interest (SSSI)
Sites of Special Scientific Interest are protected by law under the Nature Conservation (Scotland) Act 2004 to conserve their plants, animals and habitats, rocks and landforms.

Source of flooding
The type of flooding. This can be coastal, river, surface water or groundwater.

Special Area of Conservation (SAC)
Special Areas of Conservation are strictly protected sites designated under the European Habitats Directive. The Directive requires the establishment of a European network of protected areas which are internationally important for threatened habitats and species

Special Protection Areas (SPA)
Special Protection Areas are strictly protected sites classified in accordance with the European Birds Directive. They are classified for rare and vulnerable birds (as listed in the Directive), and for regularly occurring migratory species.

Standard of protection (SoP)
All flood protection structures are designed to be effective up to a specified flood likelihood (Standard of Protection). For events beyond this standard, flooding will occur. The chosen Standard of Protection will determine the required defence height and / or capacity.

Storage area
A feature that can be used to store floodwater, this can be natural in the form of low lying land or manmade such as a reservoir or modified landform.

Strategic Environmental Assessment (SEA)
A process for the early identification and assessment of the likely significant environmental effects, positive and negative, of activities. Often considered before actions are approved or adopted.

Strategic Flood Risk Assessment (SFRA)
A Strategic Flood Risk Assessment is designed for the purposes of specifically informing the Development Plan Process. A SFRA involves the collection, analysis and presentation of all existing and readily available flood risk information (from any source) for the area of interest. It constitutes a strategic overview of flood risk.

Strategic mapping and modelling
Strategic mapping and modelling actions have been identified in locations where SEPA is planning to undertake additional modelling or analysis of catchments and coastlines, working collaboratively with local authorities where appropriate, to improve the national understanding of flood risk.

Surcharge
Watercourses and culverts can carry a limited amount of water. When they can no longer cope, they overflow, or ‘surcharge’.

Surface water flooding
Flooding that occurs when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

Surface Water Management Plan (SWMP)
A plan that takes an integrated approach to drainage accounting for all aspects of urban drainage systems and produces long term and sustainable actions. The aim is to ensure that during a flood the flows created can be managed in a way that will cause minimum harm to people, buildings, the environment and business.

Surface water plan/study
The management of flooding from surface water sewers, drains, small watercourses and ditches that occurs, primarily in urban areas, during heavy rainfall. FRM Strategy actions in this category include: Surface Water Management Plans and assessment of flood risk from sewerage systems (FRM Act Section 16) by Scottish Water. These have been selected as appropriate for each Potentially Vulnerable Area.

Sustainable flood risk management
The sustainable flood risk management approach aims to meet human needs, whilst preserving the environment so that these needs can be met not only in the present, but also for future generations.
The delivery of sustainable development is generally recognised to reconcile three pillars of sustainability – environmental, social and economic.

Sustainable drainage systems (SuDS)
A set of techniques designed to slow the flow of water. They can contribute to reducing flood risk by absorbing some of the initial rainfall and then releasing it gradually, thereby reducing the flood peak and helping to mitigate downstream problems. SuDS encourage us to take account of quality, quantity and amenity/biodiversity.

UK Climate Change Projections (UKCP18)
The leading source of climate change information for the UK, with the current version published in 2018. It can help users to assess their climate risks and plan how to adapt to a changing climate. The high emissions scenario refers to the SRES A1F1 emission scenario.

Utility assets
Within the FRM Strategies this refers to electricity sub stations, mineral and fuel extraction sites, telephone assets, television and radio assets.

Voe
A dialect term, common in place names and used to refer to a small bay or creek in Orkney or Shetland.

Vulnerability
A measure of how likely someone or something is to suffer long-term damage as a result of flooding. It is a combination of the likelihood of suffering harm or damage during a flood (susceptibility) and the ability to recover following a flood (resilience).

Wave energy dissipation
Process by which a wave loses its energy.

Wave overtopping
Wave overtopping occurs when water passes over a flood wall or other structure as a result of wave action. Wave overtopping may lead to flooding particularly in exposed coastal locations.